FEBRUARY
1956

- HEINRICH RUDOLF HERTZ
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- AMATEUR CALL SIGNS

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VK3WI: Sundays, 1130 hours EST, simultaneously on 3573 and 7146 Kc., 51.016 and 146.25 Mc. Intrastate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

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EDITORIAL

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FURTHER HORIZONS

In a recent Editorial, some of the problems associated with future long-distance communication on the v.h.f. bands were propounded. There are, however, other outlets for the Amateur who is interested in electronics generally rather than just dabbling in contacts with other Amateurs. One of these is the comparatively new and promising science of Radio Astronomy.

This new science has arisen over the last decade and has now established itself as a branch of the much more ancient science of Astronomy. Disciples of this new cult are referred to as "radio astronomers," their specially devised instruments are called "radio telescopes" and the term "radio star" is used to describe what they "see" with them. It is now definitely established that certain stars emit waves in the radio spectrum which can be detected with the right equipment. That the sun and stars are broadcasting radio waves is perhaps an unfamiliar idea, yet it is an inevitable consequence of the fact that light, heat and radio waves all arise from a common cause —electrons in motion.

They are in fact, all waves of electromagnetic energy, but differ only in one essential, their wavelength. Due to the random fashion in which they are moving and the jostling impelled by the temperature of their surroundings, these thermal radio waves are spread generally over a range of wavelengths from a few centimetres to about 30 metres, and then rather weakly. However, if certain of these random electrons move in so-called "phase," very much stronger signals are produced but on a much narrower band of frequencies.

There are two ways in which radio observations are providing information about extra-terrestrial bodies—that of radar techniques in pulsing and receiving signals and the presently described method of receiving radio waves emitted naturally from heavenly bodies. By observing how these latter vary in direction, intensity and time at different wavelengths, many useful inferences of assistance to the astronomer can be drawn.

From the Amateur aspect, reasonably simple equipment can be used to receive these signals—a parabolic or other highly directional antenna rotatable in elevation and azimuth, a sensitive receiver and a means of recording the received signals. There are already many enthusiastic Amateur astronomers who, no doubt, would be very glad to have their observations supplemented and confirmed by Amateur Radio Astronomers. Here then is another method in the electronic field in which the Amateur and S.w.l. can pursue their hobby and yet render valuable information to the scientist.

FEDERAL EXECUTIVE.

THE CONTENTS

HEINRICH RUDOLF HERTZ

(A paper on the life and work of Heinrich Rudolf Hertz read to the Wireless Institute of Australia, New South Wales Division, V.h.f. Group)

BY ROBERT H. BLACK,* VK2QZ

INTRODUCTION

There are those who, like Henry Ford, consider history to be "the bunk"—but contemporary history caught up with Ford, as it eventually does with all who disregard that which has gone before. We can be sure that those who are presently "great" as the result of publicity will be allotted their appropriate place in the future and that those, whose significant contributions are not appreciated now, will be recognised as truly great at some later time—provided, of course, no Big Brother unwrites them from the history books.

The study of the lives of men who have made considerable contributions to our knowledge usually brings to light men of modesty and humility. They have found their personal reward in the search after truth, which they sought with zeal and devotion, without thought of self-aggrandisement. Hertz was such a man.

History, too, shows how great advances have been made by the observation and interpretation of apparently insignificant, even annoying, phenomena. Often these have been seen before by others, but the appreciation of their significance has awaited the notice of a man with a particular attitude of mind and background of training. As instance of this, we have recently seen the birth of a new concept in medical treatment—the introduction of penicillin and the other antibiotics—which had its origin in the chance contamination of a culture plate in Dr. Fleming's laboratory.

Except where it is shrouded by the veil of national security, or is a trade secret, scientific work is well reported—perhaps too well reported—in periodicals, books and communications to learned societies. It is on the record; and the careful experimenter makes sure that his claim to originality is a true one. In describing his work he points out what has already been done, and if his work is merely the confirmation or the development of the work of others, he states that it is so.

THE HEIDELBURG LECTURE

Hertz's contributions to physics covered many fields, but of particular interest to us are those dealing with the propagation of radio waves. I propose to commence this brief account of his work by reading a translation of part of his address given at the 62nd meeting of the German Association for the Advancement of Natural Science and Medicine at Heidelburg, on 20th September, 1889. Hertz was then 32 years old and he had completed his experimental and theoretical work on the propagation of electro-magnetic waves.

The lecture was entitled "On the relations between light and electricity." He described the work of Faraday and Clerk-Maxwell—the former spending his life seeking for proof of his concepts of lines of magnetic and electric force, the latter developing Faraday's ideas mathematically and proposing a phenomenon hitherto unknown—electric waves, which would be transversal waves, of any wavelength, but which would always be propagated in the ether with the same velocity—that of light. Hertz continued by stating that it was at this point—some 20 years after the publication of Clerk-Maxwell's work—that he was so fortunate as to be able to take part in the work. The translation by Jones and Schott (with minor amendments) then reads as follows:

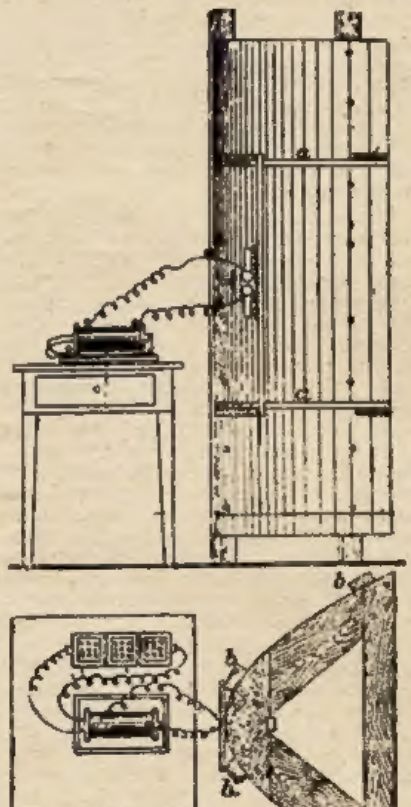

Fig. 1.

"Under suitable conditions the discharge of every kind of conductor gives rise to oscillations. These oscillations may be much shorter than those obtained by the discharge of Leyden jars. When you discharge the conductor of an electrical machine you excite oscillations whose period lies between a hundred-millionth and a thousand-millionth of a second. These oscillations are few in number and rapidly die out.

"The action of these oscillations can be perceived at a distance of about ten meters by very simple means. Just at the spot where we wish to detect the force we place a conductor, say a straight wire, which is interrupted in the middle by a small spark-gap. The rapidly alternating force sets the electricity of the conductor in motion, and gives rise to a spark at the gap. The method had to be found by experience. For the sparks are microscopically short, scarcely a hundredth of a millimeter long; they only last about a millionth of a second; but in a perfectly dark room they are visible to an eye which has been well rested in the dark. Upon this thin thread hangs the success of our undertaking. In beginning it we are met by a number of questions. Under what conditions can we get the most powerful oscillations? These conditions we must carefully investigate and make the best use of. What is the best form we can give to the receiver? We may choose straight wires or circular wires, or conductors of other forms; in each case the choice will have some effect on the phenomena. When we have settled on the form, what size shall we select? We soon find that this is a matter of some importance, that a given conductor is not suitable for the investigation of all kinds of oscillations, that there are relations between the two which remind us of the phenomena of resonance in acoustics. And lastly, are there not an endless number of positions in which we can expose a given conductor to the oscillations? In some of these the sparks are strong; in others weaker, and in others they entirely disappear.

"If you give a physicist a number of tuning-forks and resonators and ask him to demonstrate to you the propagation in time of sound waves, he will find no difficulty in doing so, even within the narrow limits of a room. He places a tuning-fork anywhere in the room, listens with the resonator at various points around and observes the intensity of sound. He shows how at certain points this is very small, and how this arises from the fact that at these points every oscillation is annulled by another one which started subsequently but travelled to the point along a shorter path. When a shorter path requires less time than a longer one, the propagation is a propagation in time. Thus the problem is solved. But the physicist now further shows us that the positions of silence follow each other at regular and equal distances: from this he determines the wave length, and, if he knows the time of vibration of the fork, he can deduce the velocity of the wave.

"In exactly the same way we proceed with our electric waves. In place of the tuning fork we use an oscillating conductor. In place of the resonator we use our interrupted wire, which also may be called an electric resonator. We observe in certain places there are sparks at the gap, in others none; we see that the dead points follow each

* 2 Yerton Avenue, Hunter's Hill, N.S.W.

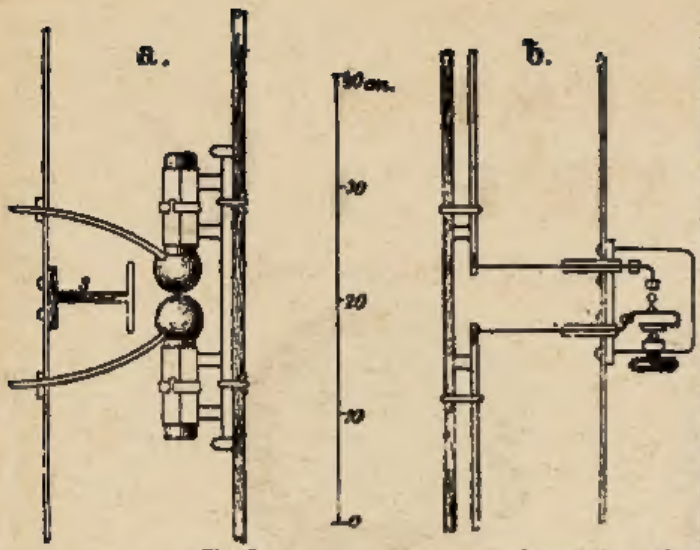

Fig. 1.

other in ordered succession. Thus the propagation in time is proved and the wave length can be measured. Next comes the question whether the waves thus demonstrated are longitudinal or transverse. At a given place we hold our wire in two different positions with reference to the wave: in one position it answers, in the other not. This is enough—the question is settled; our waves are transversal. Their velocity has now to be found. We multiply the measured wavelength by the calculated period of oscillation and find a velocity which is about that of light. If doubts are raised there is still another method open to us. In wires, as well as in air, the velocity of electric waves is enormously great, so that we can make direct comparison between the two. Now the velocity of electric waves in wires has long since been directly measured. This was an easier problem to solve, because such waves can be followed for several kilometers. Thus we obtain another measurement, purely experimental, of our velocity, and if the result is only an approximate one it at any rate does not contradict the first.

"With the aid of our electric waves we can directly exhibit the phenomena of light. We set up the conductor in which the oscillations are excited in the focal line of a very large concave mirror. The waves are thus kept together and proceed from the mirror as a powerful parallel beam. We cannot indeed see this beam directly, or feel it; its effects are manifest in exciting sparks in the conductors upon which it impinges. It only becomes visible to our eyes when they are armed with our resonators. But in other respects it is really a beam of light. By rotating the mirror we can send it in various directions, and by examining the path which it follows we can prove that it travels in a straight line. If we place a conducting body in its path we find that the beam does not pass through—it throws shadows. In doing this we do not extinguish the beam, but only throw it back: we can follow the reflected beam and convince ourselves that the laws of its reflection are the same as those of the reflection of light. We can also refract the beam in the same way as light. In order to refract a beam of light we send it through a prism, and it then suffers a deviation from its straight path. In the present case we proceed in the same way and obtain the same result; excepting that the dimensions of the waves and of the beam make it necessary for us to use a very large prism. For this reason we make our prism of a cheap material, such as pitch as asphalt. Lastly, we can with our beam observe those phenomena which hitherto have never been observed excepting with beams of light — the phenomena of polarisation. By interposing a suitable wire grating in the path of the beam we can extinguish or excite the sparks in our resonator in accordance with just the same laws as those which govern the brightening or darkening of the field of view in a polarising apparatus when we interpose a crystalline plate."

SOME OF HERTZ'S EQUIPMENT

As Hertz's experiments on radio waves were conducted in the room of a university building, they were, of necessity, conducted in that part of the spectrum now classified as the very high frequencies. V.h.f. was necessary so that observations could be made over several wavelengths and yet be within the range of the method of detection.

Figures 1 and 2 illustrate the construction of his oscillator and receiver in the experiments using the parabolic beam antenna. In these experiments he was operating on about 66 centimeters (or about 450 megacycles).

In demonstrating stationary electrical vibrations he used a different oscillator which operated on about eight meters. This is shown in Figure 3.

He derived the figure of 280,000 kilometers per second as the velocity of propagation using waves 2.8 meters in length and vibrating one hundred million times per second.

HERTZ'S POSITION IN THE HISTORY OF THE DEVELOPMENT OF RADIO

For the information of the V.h.f. Group it should be pointed out that Hertz was not the first man to operate on two meters. This honour, if such it be, is due to Professor G. F. Fitzgerald, who opened up this band in Dublin, in 1883—just 72 years ago. Hertz was unaware of this work and had to find the v.h.f. bands for himself.

The work of Faraday and Clerk-Maxwell has already been mentioned. Joseph Henry and Oliver Lodge had come near to demonstrating electromagnetic waves and von Bezold had written of electrical surgings or waves in short wires and of the interference between ordinary and reflected waves.

But to Hertz is given the credit of the first unequivocal experimental demonstration of the propagation of what he called electric waves and his work fulfilled all the postulates of Clerk-Maxwell. The story is a fascinating one —the prediction of a phenomenon not appreciable by man's unaided senses— this prediction arising as the result of Clerk-Maxwell's mathematical treatment of Faraday's conceptions of lines of force. Similarly, we have more recently seen the theoretical considerations of the atom practically demonstrated in a much more violent form.

The publication of Hertz's work was, of course, followed by some controversy —he had made an error in calculating his frequency of oscillation, and so on— but his results were confirmed and with his work began an epoch in the history of experimental physics. More sensitive methods of detecting electric waves were soon discovered, but Hertz did not live long to see the vast development of his researches.

Before we turn to the story of his life, some mention should be made of his work in other branches of physics for he published 18 other papers besides those which were collected in his book on electric waves.

SOME OF HERTZ'S OTHER CONTRIBUTIONS TO PHYSICS

These included a treatise on the Principles of Mechanics, work on induction, elasticity and hardness, evaporation of liquids including the description of a new hygrometer, invention of a hot-

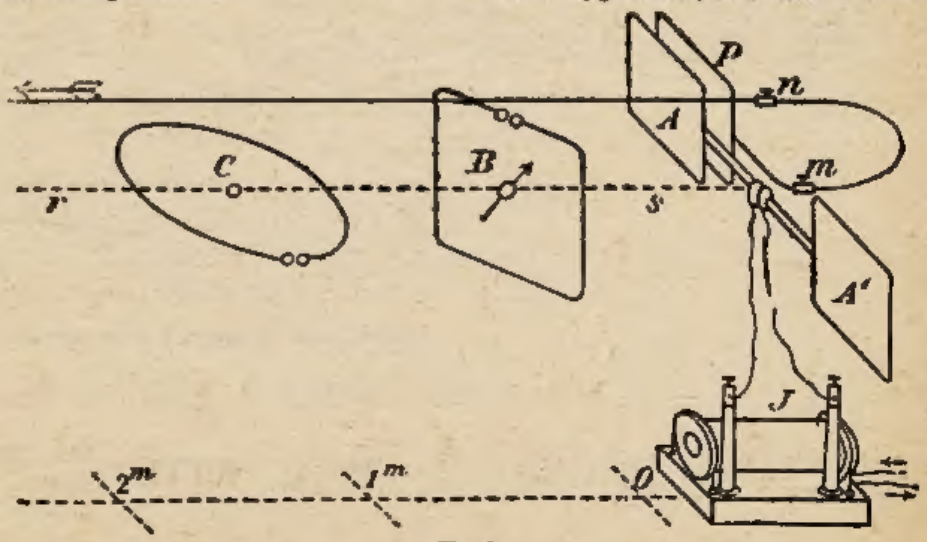

Fig. 3.

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This crystal microphone requires to be terminated with a high value parallel load of the order of 1 to 5 megohms for best results.

The mass of the moving parts is small, hence the sensitivity is high and a high efficiency is achieved.

Light gauge solder lugs are provided so that excessive heat in soldering will not be transmitted to the crystal element.

When mounted in a microphone cage, it is recommended that the insert be suspended in rubber, to eliminate shock and vibration.

One of the connecting lugs is directly connected to the case and care should be taken to solder the metal shield of the microphone cable to this solder lug, keeping the unscreened portion of the centre conductor as short as possible to eliminate hum pick-up.

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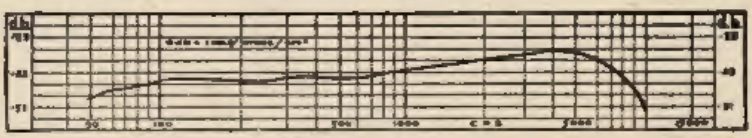

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wire ammeter, and just before his death he discovered that cathode rays would pass through thin metallic layers, thus foreshadowing the development of X-rays.

All of this was compressed into a life span of just under 37 years.

CURRICULUM VITAE

Heinrich Rudolf Hertz was born 22nd February, 1857, in Hamburg. Partly of Jewish origin, he was the son of Dr. Gustav Hertz, a barrister who later became senator. As a boy he attended the municipal primary school and, after a year's preparation at home, proceeded to the Hamburg High School; here he matriculated in 1875, at the age of 18 years. Even while he was attending school his interests had become manifest—he worked at home at his bench and lathe and attended the Trade School on Sundays to practise geometrical drawing.

In 1877 he went to the University of Munich to continue his training in engineering, for which he had already prepared himself by the study of mathematics and natural science. However, after careful consideration, he decided that he would not be satisfied with engineering although it was a profession in which he would be certain to earn his livelihood. He wrote and asked his father if he would support him through the studies of the natural sciences in which persuit he obtained much more satisfaction. Having obtained permission to change his course, he spent a year at Munich attending courses in mathematics, mechanics and practical physics.

In 1878 he went to Berlin University and found that there was a prize being offered for the solution of a problem in physics dealing with electrical inertia. He discussed this with von Helmholtz and decided to attempt to solve it. He was given a room to work in and received the interested attention of von Helmholtz. He attended lectures in the morning and worked on his problem in the afternoon, reading the literature at night. He solved the problem and then wrote up his results while doing his military service at Freiburg. His research gained him the prize of a gold medal.

He then turned his attention to induction, and also attended lectures by Kirchhoff on magnetism. He wrote to his parents that much of what he was told he had already worked out for himself. His work on induction formed the thesis for his doctorate which he secured in 1880.

For the next three years he worked as demonstrator in the physics laboratory as assistant to von Helmholtz. Some of his work at this time dealt with cathode rays and he was so anxious to get on with it that he could not wait the two days for tubes to be made on order by the glass-blower: he made them himself. In 1883 he moved to Kiel with promotion to Privat Docent, or unpaid lecturer. Two years later he was called to Karlsruhe where he became ordinary Professor of Physics and where he was able to carry out his work on electric waves. Here, too, he married Miss Elizabeth Doll, the daughter of one of his colleagues.

In 1889 he attended the meeting of the German Association for the Advancement of Natural Science and read his paper on light and electricity. In the same year he became Professor of Physics at the University of Bonn. In these, his last years, he received honours from many learned societies in many countries, including the Rumford Medal of the Royal Society. In 1892 he became ill, but an operation was performed at the end of the year which allowed him to continue lecturing, with great effort, until 7th December, 1893. He died on New Year's Day, 1894.

Of his early death von Helmholtz said that " in old classical times it would have been said that he had fallen a victim to the envy of the gods." He added that Hertz's memory would live not only through his work, but also through his modesty, his warm recognition of the labours of others, and his genuine gratitude towards his teachers. Although naturally quiet, Hertz could be convivial with friends, and enliven discourse by many an apt remark. He never made an enemy, although he knew how to judge slovenly work, and to appraise at its true value any pretentious claim to scientific recognition.

Dr. Oliver Lodge spoke of Hertz's death as weakening the front ranks of scientific workers—the untimely end of a young and brilliant career which, however, had effected an achievement which would hand his name down to posterity. "Never was there a man more painfully anxious to avoid wounding the susceptibility of others."

REFERENCES

For those of you who wish to share the enjoyment of Hertz in his work, his papers have been collected in three volumes in English, translated by D. E. Jones and G. H. Schott, published by MacMillan & Company, as: "Electric Waves," in 1893, with a preface by Lord Kelvin; "Miscellaneous Papers," in 1896, with an introduction by Professor Lenard; and "The Principles of Mechanics," in 1899, with an introduction by von Helmholtz. In an introduction to "Electric Waves," Hertz goes through the period of his experimental work, recording his hopes, ideas, difficulties and interpretations so that we have here a record of his mind at work—a rare thing in the history of scientific discovery.

In addition, there is "Signalling through space without wires: the work of Hertz and his successors," by Oliver J. Lodge, published (undated) in "The Electrician" Series, London. Hertz's experiments were also described in outline by Sir Joseph J. Thomson in an article in the Encyclopoedia Britannica.

— . . . —

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A very fine and workman-like finish can be made with panels for test instruments, etc., by first cleaning the aluminium panel with some steel wool and spraying (a fly spray is excellent for the job) with clear varnish as used for coating charcoal and pencil sketches. This varnish can be obtained from most stores dealing in artists' colours and oils.

Another good clear coating (which the writer prefers) is ordinary clear nail lacquer. This can be brushed on with a fine camel hair brush or even the small brush that comes with the bottle. It leaves a very clear and durable finish.

If prior to varnishing, the panel is drilled and lettering done with black Indian ink, a quite professional job results and the coat of lacquer protects the ink from cracking or being rubbed off.—VK3SZ (reprinted from "A.R.," Jan. 1946).

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PVI8-55

Transformer Theory and Practice

PART ONE

BY V. J. McMILLAN,* VK2AWN

• In this article the Author endeavours to explain some fundamental aspects of transformer design as applied to modulation transformers, and also discusses leakage reactance in general terms. The Author assumes that the reader understands the basic transformer equation covering the relationship between turns, voltage, frequency and total flux.

Fig. 1 shows a vector diagram of a normal power transformer supplying a non-inductive load. The two shaded triangles are the vector quantities representing the iron loss and magnetising current components of the exciting current. In practice, these are so small, as compared with the other vector quantities, that they can be neglected.

This leads us to the very simple vector diagram shown in Fig. 2. In this diagram the separate values of primary and secondary resistance and reactance values have been combined into "equivalent" values of resistance and leakage reactance.

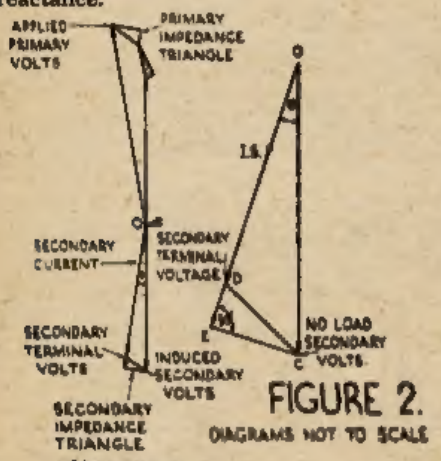

FIGURE 2.

DIAGRAMS NOT TO SCALE

FIGURE 1

Actually, when we measure the impedance and copper loss of a transformer, the values which we obtain in the test are "equivalent" values since there is no practical method of directly measuring the separate values of primary and secondary leakage reactances although the separate values of primary and secondary resistance can, of course, be measured.

In Fig. 2:

The vector O.C. is the no load secondary voltage.

The vector O.D. is the secondary terminal voltage when the secondary is loaded.

The vector D.C. is the "equivalent" impedance voltage drop when the secondary is loaded.

The vector D.E. is the "equivalent" resistance voltage drop when the secondary is loaded.

The vector E.C. is the "equivalent" leakage reactance voltage drop when the secondary is loaded.

The angle Theta between the no-load secondary voltage and the secondary terminal voltage is the "phase angle" or, as Radio Engineers would term it, the "phase shift."

The angle D.E.C. is always 90° and so by using the hypotenuse of a right angled triangle to represent the no-load secondary voltage, and either measuring or calculating the values in the equivalent impedance triangle represented by the lines E.C, E.D, and D.C, we can calculate the secondary terminal voltage represented by the vector line O.D.

For one specific value of load and frequency this is a relatively easy problem. In the case of a modulation transformer, however, it is not quite so easy since both load current and leakage reactance vary with the frequency.

First of all it must be appreciated that a modulation transformer does supply a load which is to all intents and purposes non-inductive. Actually, due to the presence of the tank tuning condenser and by-pass capacitors, the load is of slightly leading power factor, but the value of capacity current as compared with the resistance load current is so small that it can be neglected.

At this stage it is necessary for us to have a thorough understanding of certain transformer facts before we are able to appreciate the significance of the various quantities shown on the vector diagram Fig. 2.

(a) The rating of a transformer is expressed in volt-amps. The volt-amp. rating is the product of the secondary current and the **no-load** secondary voltage. Although the user is only concerned with the secondary terminal voltage at a specified load, from a transformer calculation point of view, the terminal voltage is merely incidental!

(b) The vector quantity E.C. in Fig. 2 is the equivalent leakage reactance voltage drop at the specified volt-amp. load.

(c) The vector quantity E.D. in Fig. 2 is the equivalent resistance voltage drop at the specified volt-amp. load.

(d) The vector quantity D.C. in Fig. 2 is the equivalent impedance voltage drop at the specified volt-amp. load.

(e) The vector quantity O.C. in Fig. 2 is the no-load secondary voltage which is opposite in phase and equal to the primary voltage on the assumption of a one to one ratio of turns.

(f) The vector quantity O.D. in Fig. 2 is the secondary terminal voltage at the specified volt-amp. load.

(g) The angle Theta is the phase angle between secondary terminal voltage and reversed primary voltage.

It is usual to express the equivalent resistance, reactance and impedance as a percentage rather than in ohms.

The percentage resistance is:—

$$\% R = \frac{\text{Copper loss of both windings} \times 100}{\text{volt-amp. rating}} \quad (a)$$

The percentage impedance is:—

$$\% Z = \frac{Z \text{ volts} \times 100}{\text{Normal voltage of winding}} \quad (b)$$

where Z = that voltage which will cause normal load current to pass through the winding with the other winding short circuited. (This test can be carried out with either the primary or secondary short circuited, whichever is the most convenient.)

The percentage reactance (%X) is:—

$$\% X = \sqrt{\%Z^2 - \%R^2} \quad (c)$$

The foregoing values of %Z and %R are, of course, measured values on a completed transformer. However, it is possible to calculate the values of %R and %X, from which the value of %Z may be obtained. More of this later.

Having obtained, by measurement or calculation, the values of %R, %Z and %X, we can draw the vector diagram shown in Fig. 2 for the secondary voltage side of the transformer. At this stage an example would help to clear up any obscure points.

Let us assume that we have a transformer rated at 60 volt-amps., primary voltage 450, secondary voltage 467, single phase, 50 cycles. At 60 volt-amps. rating the primary current will be: 60 ÷ 450 = 0.1333 amps., and the secondary current will be: 60 ÷ 467 = 0.1284 amps.

If we short circuit the secondary (467v.) winding and apply a 50 cycle voltage to the primary (450v.) winding, such that the current in the primary winding is 0.1333 amps. (that is, full load current), then this voltage will be a measure of the full load impedance voltage of the transformer (at this particular frequency). For example if this voltage was 18.45 volts, the percentage impedance voltage would be:—

From formula (b)

$$\frac{18.45 \times 100}{450} = 4.1\% \quad (\%Z)$$

If we assume that the primary resistance at the time of testing the above transformer is 69.6 ohms and that the secondary resistance is 72.6 ohms, we can determine the total copper loss of the transformer by calculation, viz.:—

* 26 Waters Road, Naremburn, N.S.W.

GELOSO SIGNAL SHIFTER

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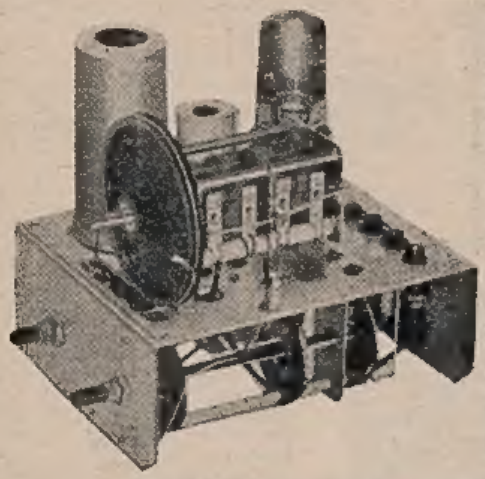

The Variable Frequency Oscillator that Geloso have designed for their transmitter type G.210-TR is now available as a separate unit. The importance of a stable oscillator in a transmitter is well known to Hams, for on it depends the stability of the transmitted signal which is a very necessary requirement of all transmitting stations. In order to obtain such stability one may resort to the use of multiple quartz crystals, but it is easier, cheaper and more convenient to use a Variable Frequency Oscillator. This oscillator also provides a means of quick frequency changing to any part of any Amateur band so as to avoid interference, etc. Amongst the types of circuits available for Variable Frequency Oscillators, the best known is possibly the "Clapp," and this is employed in the GELOSO SIGNAL SHIFTER.

In order to obtain complete isolation and freedom from "detuning" effects between the oscillator and power amplifier stage, it is desirable to employ an isolator stage and this is adopted in the Geloso unit.

The GELOSO SIGNAL SHIFTER employs three valves. It can be used in conjunction with any type of transmitter and it is easily adapted, both on account of its small size and the accessibility of controls. The power supply is external and can be provided from any existing unit. A source of stabilised voltage is desirable for the 6J5 stage.

The function of the 6J5 is that of Oscillator. The table summary printed below shows the wavelengths to which the different oscillating circuits are tuned. The tuning of the oscillator is controlled by a variable condenser of four sections, of 50 pF. each. Two sections are connected in parallel and are used to cover the range of the 80 metre band. A third section is used in the range of 40-10 metres, and the fourth section for the 20-15 metre range.

A 6AU6 acts as an Isolator. The signal reaches this valve through a 100 pF. condenser connected to the cathode of the oscillator. Through another condenser of 100 pF. the signal passes from the plate of the 6AU6 to the power amplifier stage which employs a 6V6/6L6 type valve. The plate circuit of this valve contains a tuned circuit for each range.

A single multi-contact switch is used for band changing of all these circuits. It is necessary to connect a knob to this switch with suitable panel markings to indicate the respective wave band. It might be noted that a high L/C ratio has been employed in this circuit.

FUNCTION OF THE VARIOUS CIRCUITS

Band Mc.	Clapp Osc. (6J5)	Isolator (6AU6)	Power Amp. (6V6)	Final Output
3.5	3.5—4.0 Mc.	Aperiodic Amp.	Amplifier 3.8 Mc.	3.5— 4.0 Mc.
7	7.0—7.45 ,,	Aperiodic Amp.	Amplifier 7.26 ,,	7.0— 7.45 ,,
14	3.5—3.6 ,,	D'bler 7.15 Mc.	Doubler 14.2 ,,	14.0—14.4 ,,
21	3.5—3.6 ,,	D'bler 7.15 Mc.	Tripler 21.35 ,,	21.0—21.6 ,,
28	7.0—7.45 ,,	D'bler 14.1 Mc.	Doubler 28.2 ,,	28.0—29.8 ,,

The screen of the 6V6 is connected to a separate terminal on the power-connecting strip. When this lead is connected to a potentiometer of 35,000 ohms from the h.t. supply, a voltage control of the screen voltage is obtained, thus providing a control of the output of the unit.

The VFO is supplied ready for use and only minor retrimming will be necessary to peak all circuits. With this unit is also supplied a special dial which can be easily fitted to the VFO. With the aid of the dial, which is graduated in frequency, and a good frequency meter (e.g. BC221), the calibration of the unit is a relatively easy matter. A table is given with each unit showing the settings and steps to be followed, both with the Clapp Oscillator as well as for the isolator and p.a. stages.

SUMMARY. Power Supply: 400 volts at 32-54 Ma. (80-10 metres). **RF Power:** If a type 807 valve is used in the final stage, the Geloso VFO will provide better than 3.5 Ma. on all bands across a 25,000 ohm grid resistor.

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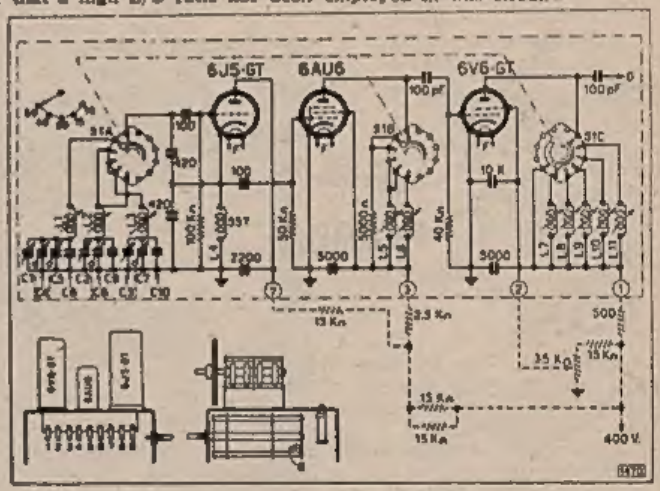

- ★ Instant change of frequency on any band by coil switching.
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Primary loss =
(0.1333 amps.)² × 69.6 = 1.24 watts
Secondary loss =
(0.1284 amps.)² × 72.6 = 1.20 watts

Total loss = 2.44 watts

This total loss must now be referred to the volt-amp. rating of the transformer, which is 60 V.A.

From formula (a)

$$\frac{2.44 \times 100}{60} = 4.06\% \quad (\%R)$$

We can now calculate the percentage reactance from these two values.

From formula (c)

$$= \sqrt{(4.1)^2 - (4.067)^2}$$
$$= \sqrt{16.81 - 16.54}$$
$$= \sqrt{0.27}$$
$$= 0.52\% \text{ approx.} \quad (\%X)$$

This particular value of (leakage) reactance holds only for the particular frequency at which the transformer is tested. Its value at any other frequency varies directly proportionally to the frequency. This latter statement is particularly significant when applied to modulation transformers.

In the foregoing example we have determined the percentage impedance (%Z), percentage resistance (%R), and percentage (leakage) reactance (%X). We can now apply these values to determine their effect on the secondary side of the transformer, viz.:—

Secondary impedance drop =
4.1% of 467 = 19.15 volts.

Secondary resistance drop =
4.067% of 467 = 19.0 volts.

Secondary reactance drop =
0.52% of 467 = 2.43 volts.

The above values are "equivalent" values referred to the secondary side.

We assumed in the foregoing example that the operating frequency was 50 cycles. If we use this transformer as a modulation transformer, the secondary resistance drop will remain unchanged (at the same volt-amp. rating), but the secondary reactance drop will vary in accordance with the applied frequency, and since the reactance is altering so, too, must the impedance drop vary.

At 400 cycles the reactance voltage drop will be (2.43 × 400) ÷ 50 = 19.44 volts. At 5000 cycles, the reactance voltage drop will be (2.43 × 5000) ÷ 50 = 243 volts.

This value of 243 volts is 52% of the no-load secondary voltage, which obviously shows that the secondary terminal voltage cannot be anywhere near 100%. There is, however, a levelling off effect since a reduced secondary voltage will pass a reduced current through the external load, and so the output of the transformer is reduced.

The actual terminal voltage can be determined for any frequency by converting the %R and %X values to ohmic values.

In the foregoing example the secondary "equivalent" resistance drop was 19 volts and since the secondary load current is 0.1284 amps., the "equivalent" ohmic resistance is 19 ÷ 0.1284 = 148 ohms.

Similarly, the secondary "equivalent" reactance drop was 2.43 volts and the "equivalent" ohmic reactance is 2.43 ÷ 0.1284 = 18.92 ohms (at 50 cycles).

As stated before, the equivalent ohmic resistance does not alter, but the equivalent ohmic reactance varies directly as the frequency. In the example, the ohmic reactance at 400 cycles will be (18.92 × 400) ÷ 50 = 151.4 ohms, and at 5000 cycles it will be (18.92 × 5000) ÷ 50 = 1892 ohms.

In order to fully appreciate the significance of changing frequency on a modulation transformer, let us assume that the previously considered transformer is supplying a 100 watt transmitter which has 600 volts and 174.7 milliamps. supplied to it. That is to say, it represents a load resistance of 600 ÷ 0.1747 = 3435 ohms (approx.) To this value of load resistance we must add the "equivalent" secondary resistance of the transformer, viz.: 3435 + 148 = 3583 ohms total.

FIGURE 3

Fig. 3 shows a scale vector diagram for the above example calculated for the conditions at 400 cycles and 5000 cycles. To draw this vector diagram we must first of all calculate the load impedance for the two conditions. For the 400 cycle condition the total resistance (which we have just calculated) is 3583 ohms and the reactance—as we have seen previously—will be 151.4 ohms. Since these two components are 90° out of phase with each other, their combined impedance (Z) will be:—

$$Z = \sqrt{(R)^2 + (X)^2} \quad (d)$$
$$\text{which is } \sqrt{(3583)^2 + (151.4)^2}$$
$$= \sqrt{12{,}837{,}889 + 22922}$$
$$= \sqrt{12{,}860{,}811}$$
$$= 3586 \text{ ohms approx.}$$
(4052 at 5000 cycles).

Since the secondary no-load voltage is 467v., the current through the secondary winding will be 467 ÷ 3586 = 0.1302 amps. (0.11525 at 5000 cycles).

From this value of load current we can determine the values to insert in the vector diagram Fig. 3, viz.:—

The vector O.C. is the secondary no-load voltage = 467 volts.

The vector C.E. is the reactance drop at 400 cycles which is 0.1302 (amp.) × 151.4 (ohms) = 19.7 volts.

The vector O.E. is the total resistance drop in the circuit (that is, load resistance plus equivalent secondary resistance of the transformer). This value is thus: 0.1302 × 3583 = 466.5 volts.

The vector D.E. is the equivalent resistance drop in the transformer secondary which is: 0.1302 × 148 = 19.3 volts.

The vector O.D. is obviously the difference between O.E. and D.E. which is: 466.5 — 19.3 = 447.2 volts.

This voltage is the actual terminal voltage of the transformer and would be the voltage impressed on the carrier of our transmitter.

By a similar series of calculations, we find that at 5000 cycles the vector quantities (in Fig. 3) are:—

C.G. = 218 volts
O.G. = 413 volts
H.G. = 17 volts
O.H. = 396 volts

We can therefore see that the transformer regulation with this particular resistance load at 400 cycles is approximately 20 volts, which is: (20 × 100) ÷ 467 = 4.27%; whilst at 5000 cycles it is 71 volts, which is: (71 × 100) ÷ 467 = 15.2%. A similar calculation carried out for 10,000 cycles would show an even more marked voltage regulation figure.

By this time you should fully appreciate the necessity for a low reactance between the primary and secondary of a modulation transformer. It is also very easy to see how a poorly designed transformer cannot possibly have a good high frequency response.

The general explanation given above and vector diagram (Fig. 3) deal with the transformer operating conditions at the higher frequencies. At the same time, certain effects which do occur in practice (such as resonance and the shunting effect of the capacity of the windings) have been neglected.

At low frequencies the effects of iron loss and magnetising current are of more importance than that of leakage reactance. However, in most cases (providing the core iron is not run beyond its saturation point) the voltage regulation—due to the iron loss and magnetising current—does not exceed 1 or 2 per cent.

From a practical design point of view, the core iron should not be run at an induction density greater than 14,100 lines per square centimetre at the lowest frequency that it is desired to reproduce.

From a communication point of view, there is little to be gained by making a transformer to reproduce 50 cycle notes. The loud speaker of the average Amateur's receiver is not capable of handling it anyway! Very few Amateurs have their speakers properly baffled—more frequently they are contained in a small box about 10" square!

(Continued next month)

AMATEUR CALL SIGNS

FOR MONTH OF NOVEMBER, 1955

NEW CALL SIGNS

VK— **New South Wales**

2EC—E. C. Rough, 31 Lords Place, Orange.
2FS—B. C. Fleck, 20 Yoolooma St., Griffith, 5S.
2KJ—P. J. Greigg, "Glen Retreat," R.M.B. 13 Foots Rd., Ourimbah.
2ML—R. M. Ellison, 161 Albert St., Strathfield.
2ABW—E. G. Baker, 66 Bridge St., Waratah.
2AHS—N. E. Parsons, 120 Ashley St., Chatswood.
2ASD—Sydney University Squadron, 8th Floor, Dymock's Bldg., 428 George St., Sydney.
2AVJ—W. B. Jones, C/o. Griffith Producers Co-op. Pty. Ltd., Griffith.
2AVL—C. F. Luck, St. James Flats, 6 Stanley St., Sydney.
2ZBY—J. T. Parrott, Gordon St., Culcairn.

Victoria

3DF—G. D. Clarke, 545 St. Kilda Rd., Prahran.
3EO—R. A. H. Russell, 5 Francis St., Coburg.
3IJ—D. R. Twigg, 33 Chapman Ave., Glenroy.
3OP—J. H. Kosseck, 43 Ford St., Newport.
3ADV—B. D. Alexander, Station "Wahroonga," Beaufort Rd., Skipton, Postal: P.O. Box 18, Skipton.
3AHJ—R. J. Harrison, Lot 3 Railway Pde., Glenroy.
3APX—P. X. Davies, Station: Police Station, Romsey, Postal: C/o. 3 Jackson St., Toorak.
3AUM—A. M. Upton, Station: Bilcola Heights, Cockatoo; Postal: 15 Bowen St., Hawthorn.
3AZY—T. J. Hunt, "Yamala," Olivers Hill, Frankston.
3ZBO—R. F. V. Crewe, 11 Clifton Gr., Hawthorn East.
3ZBP—G. I. Davies, 159 Dawson St., West Brunswick, N.12.
3ZBZ—A. W. M. Buesst, 5 Torresdale Rd., Toorak.

Queensland

4GV—G. C. Campbell, "Camp Bell," Cyprus Ave., Surfer's Paradise.
4MO—I. C. Morrison (Dr.), "Avon Lodge," 171 Riding Rd., Hawthorne.
4PW—D. W. Presland, 18 Jeffries St., Yeppoon.

South Australia

5MG—J. McG. Moffatt, 8 Swan Ter., Port Adelaide.
5VB—W. D. Randall, 38 Felton St., Largs Bay.
5ZBA—J. A. Beasley, 7 Francis St., Cowandilla.

Western Australia

0DG—G. D. Garratt, Troughton Island, W.A.

CHANGES OF ADDRESS

VK— **New South Wales**

2IB—G. L. Rhodes, 6 Bourke St., Pymble.
2LN—A. Le Nevez, 5 Wyuna Rd., West Pymble.
2NS—T. F. Evans, 100 Mitre St., Bathurst.
2QI—C. Bowler, Station: S.S. "River Glenelg", Postal: C/o. 25 Castle St., Randwick.
2AOB—R. B. Digby, Cr. Bent and Beaconsfield Rds., Lindfield.
2ATN—F. G. Barron, Lower Burrinjuck, via Bowning.

Victoria

3AP—A. H. Bowley, 5 Caroline St., Hawthorn East.
3EE—C. E. Fredrickson, 27 Patterson St., Carrum.
3EV—F. W. Walker, 15 Closter St., Nunawading.
3GT—G. E. Lewis, 20 River St., Briar Hill.
3IB—A. C. Hawker, C/o. Station 3LK, Lubeck.
3KI—T. P. Kirby, Durham Rd., Kilsyth.
3SQ—A. C. Robinson, 18 Essex St., Blackburn.
3YW—C. C. Waring, 24 Koroit St., Warrnambool.
3ZR—G. C. Moody, 67 Princess St., Kew.
3AGJ—G. W. Jane, 11 Bellevue Ave., Chadstone, S.E.10.
3ZAL—R. A. Foot, 67 Parkmore St., East Bentleigh.

Queensland

4EF—E. F. Fell, 17 Roy St., Ashgrove, Brisbane.
4WD—W. G. Dodd, "Dunolly," 62 Pier Ave., Shorncliffe.

South Australia

5AL—K. S. Harris, Wonarah, via Tennant Creek, N.T.
5RA—L. R. Latta, 40 Cooper Place, Beaumont.
5SL—L. N. Sjoberg, 16 Rodney St., Woodville.

Tasmania

7MC—W. R. Attwood, No. 1 Staff House, Bell Bay.
7MK—M. N. Koglin, Block 178, East Risdon Rd., Lindisfarne.
7RE—R. A. Emmerton, 155 New Town Rd., New Town.

Territories

9BP—B. P. O'Connor, C/o. A.P.C., P.O. Box 84, Port Moresby.

CANCELLED CALL SIGNS

VK— **New South Wales**

2AOC—A. O. Chappell.
2ZAL—C. F. Luck. Now VK2AVL.
2ZBF—B. C. Fleck. Now VK2PS.
2ZBJ—W. B. Jones. Now VK2AVJ.

Victoria

3WC—P. J. Greigg. Now VK2KJ.
3AQM—H. P. Morris.
3ZBO—T. J. Hunt. Now VK3AZY.
3ZBP—B. D. Alexander. Now VK3ADV.

Queensland

4DS—N. E. Parsons. Now VK2AHS.
4ZAM—I. E. Morrison (Dr.). Now VK4MO.

South Australia

5DG—G. D. Garratt. Now VK6DG.
5WZ—F. G. Anear.
5ZAM—J. McG. Moffatt. Now VK5MG.

Tasmania

7IJ—D. R. Twigg. Now VK3IJ.

Territories

9GV—G. V. Campbell. Now VK4GV.
9RO—R. M. Ellison. Now VK2ML.

ERRATUM

Among the new call signs listed in the last issue of "A.R.," was VK3OLU. This should have read: VK3ALU, L. E. Lloyd, Murray Valley Highway, Nyah.

FOR MONTH OF DECEMBER, 1955

NEW CALL SIGNS

VK— **New South Wales**

2MC—D. M. MacMillan, 36 Vernon St., Cessnock.
2ML—R. M. Ellison, 161 Albert Rd., Strathfield.
2AHS—N. E. Parsons, 120 Ashley St., Chatswood.
2AWT—N. J. Watling, 23 Station St., Pymble.
2ZBK—N. F. Wilde, "Wyoming," The Village, Blayney.
2ZBL—W. S. Lane, 15 Hyman St., Tamworth, 4N.
2ZBV—A. F. W. Reynolds, 130 Ross St., Darlington.
2ZCA—K. G. Laycock, 30 Bremer St., Canberra, A.C.T.
2ZCF—R. C. F. Norman, 23 Queen St., Croydon.
2ZCH—A. K. Hore, R.A.A.F., Bankstown.

Victoria

3MJ—W. L. Matters, 12 Kinadale Cres., Box Hill North.
3NB—A. F. B. Nickson, 18 St. Andries St., Camberwell.
3OR—R. S. Robinson, Station: 8 Avalon Rd., Armadale; Postal: Flat 8, 37 Eildon Rd., St. Kilda.
3AOE—H. J. Edney, Mandeville St., Hopetoun.
3AVE—E. V. Avenell, C/o. Beam Wireless Station, Fiskville, via Ballan.
3ZBH—P. C. Laycock, Windsor Rd., Boronia.
3ZCB—L. J. Bills-Thompson, 76a Fairmount Rd., Hawthorn East.
3ZCG—W. G. Francis, Woolamai Rd., Dalyston.
3ZCM—W. J. R. Michie, 36 Sussex St., Brighton.
3ZCR—R. C. Owen, 57 Reeve St., Sale.
3ZCW—M. A. White, Mitchell St., Ouyen.

Queensland

4DW—C. D. Wright, 1 Browns Dip St., Enoggera.
4GT—W. G. Heaton, 5 Spring St., East Ipswich.
4LI—R. J. Linskel, 6 Clay St., East Ipswich.
4NT—N. T. Casey, Hastie St., Mareeba.
4YU—D. Dawson, C/o. Station 4MK, Gordon St., Mackay.
4ZAE—A. M. Simpson, 19 Little St., Albion, [illegible]
4ZAJ—F. J. Edwards, 1 Market St., Warwick.
4ZAT—T. R. Cuttle, Robertson Rd., Ipswich.

South Australia

5AB—B. C. Jellett, Norton Vale, Hynam.
5EK—G. H. Keith, 58 Francis St., Clarence Park.
5QW—B. G. Waight, C/o. Mrs. O. Cosgrove, 8 Hulbert St., Hove, Adelaide.
5SS—C. G. S. Sappiatzer, 7 Bennett St., Hilton.
5ZAR—R. W. Hercus, 317 Kensington Rd., Kensington Park.
5ZAS—R. H. Angrave, 18 Mary St., St. Leonards.
5ZAZ—J. M. Gluyas, Port Pirie.

Western Australia

6DG—G. D. Garratt, Troughton Island.
6DJ—W. R. Woodley, 9 Cagill St., Victoria Park.
6UG—J. H. White, 30 Sutcliffe St., Nedlands.
6ZAG—J. Kitchin, 17 Packenham St., Mt. Lawley.
6ZAJ—B. W. A. Jacobs, 69 Lawler St. Subiaco.
6ZAL—T. S. Long, 106 Spencer St., Bunbury.
6ZAP—D. C. Fairs, Collier Rd., Bayswater.

Tasmania

7RF—R. T. Forster, 1 First Ave., Springfield, Hobart.

Territories

1DA—D. A. Brown, Macquarie Island.
1IJ—D. R. Twigg, Antarctic.

CHANGES OF ADDRESS

VK— **New South Wales**

2GT—G. T. Bruce, "White Mists," Eighth Ave., Loftus.
2JE—J. C. Redman, 52 Raglan St., Wallsend.
2NX—J. R. Cameron, Cambridge St., South Grafton.
2QT—T. G. Thorpe, 930 Botany Rd., Mascot.
2RW—R. W. Cusiter, 32 Derby St., Hornsby.
2SA—W. E. Salmon, 77 Flora St., Kirrawee.
2VX—V. E. Stanley, Station: O.T.C. Station, Doonside, Postal: Box 6, P.O., Blacktown.
2VZ—F. W. Ross, 313 Connels Point Rd., Connels Point.
2AAT—J. H. Hansen, M.V. "Boonaroo," C/o. 70 Robey St., Maroubra.
2ZCA—A. K. Hore, R.A.A.F., Bankstown.

Victoria

3QJ—R. H. Roseblade, 149 Ashburn Gr., Ashburton.
3ZU—F. A. O'Donnell, 81 Sharp St., Yarrawonga.
3APD—J. P. Downie, 26 Gwenda Ave., Moorabbin.
3AQH—H. Denver, 3 Murray Drive, Burwood.

Queensland

4BE—A. F. W. Taylor, 9 Lothair St., Pimlico, Townsville.
4GG—G. Heilbronn, Creek St., Crows Nest.

Western Australia

6GK—D. R. Annesley, Cr. York Rd. and Lynn St., Collie.
6RD—H. R. Dowsett, 53 Festing St., Albany.

Tasmania

7LC—L. A. Chappell, 6 Cheveron Rd., Sandy Bay.

CANCELLED CALL SIGNS

VK— **New South Wales**

2UG—J. H. White. Now VK6UG.
2YU—D. Dawson. Now VK4YU.
2ZN—J. Brand.
2AKW—G. H. Humphrey.

Victoria

3IJ—D. R. Twigg. Now VK1IJ.
3LW—A. F. B. Nickson. Now VK3NB.
3ADG—D. A. Gray.
3APW—R. F. Woolley.
3ATF—R. T. Forster. Now VK7RF.
3ZBC—A. K. Hore. Now VK2ZCH.

Queensland

4EK—G. H. Keith. Now VK5EK.
4GW—H. H. Varnes.
4WT—N. J. Watling. Now V2AWT.

South Australia

5JX—J. C. Golley.
5ZAB—B. C. Jellett. Now VK5AB.
5ZAC—E. L. Murray.

Tasmania

7DN—T. F. Carter, Jnr.

1954 WORLD WIDE DX CONTEST VK RESULTS

Published in "CQ," October, 1955

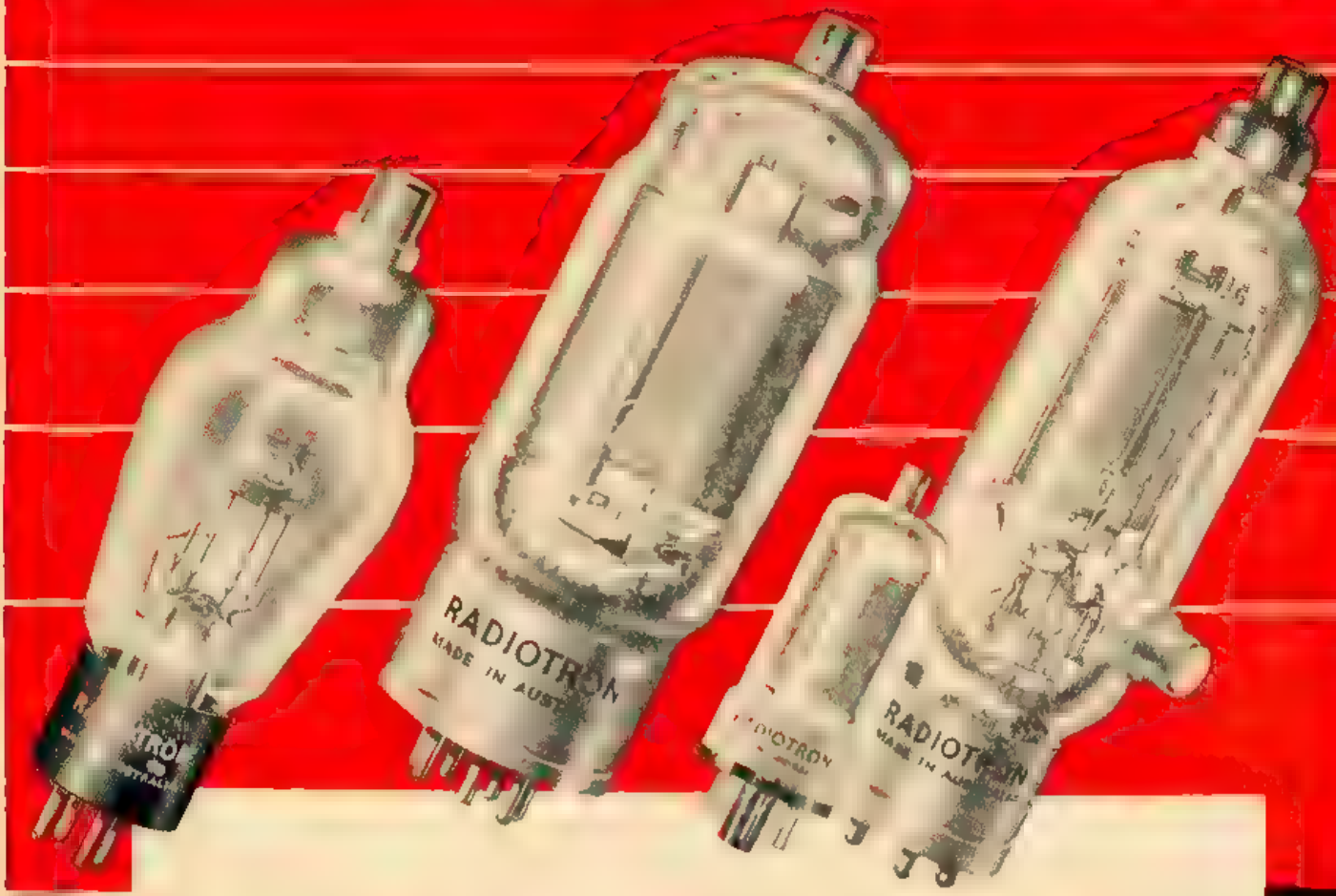
C.W.—Single Operator

All Band		14 Mc.	
VK2GW	90,882	VK2GW	20882
VK3XK	30,256	VK5HT	17543
VK2PV	17,538	VK3XK	8738
3.5 Mc.		VK2PV	7406
VK3AHH	462	VK3HL	7185
VK2GW	20	VK3CX	6916
VK2PV	4	VK3KB	2372
VK3XK	4	VK7RT	1387
7 Mc.		**21 Mc.**	
VK2GW	9620	VK2GW	2384
VK3XB	3304	VK2PV	152
VK3XK	3285	VK3XK	144
VK2PV	896		

Phone—Single Operator

All Band		21 Mc.	
VK2GW	8003	VK4EL	848
VK4HD	1701	VK4HD	630
VK5WO	1372	VK5WO	24
7 Mc.		VK2GW	12
VK2GW	288		
14 Mc.		**28 Mc.**	
VK5XN	10918	VK4HD	252
VK2GW	4582	VK5WO	6
VK3ACN	1950		
VK5WO	880		

RADIOTRON POWER VALVES



Today's high standards of radio performance are dependant upon the use of first quality components.

Radiotron valves are manufactured to exacting standards which ensure you of the ultimate in performance at all times.

Be sure of the quality and consistency of your signals by using Radiotron Power Valves.

Important: When ordering valves, be sure to mention "Amateur Radio" so that priority can be given to your order.

AWV **RADIOTRON**

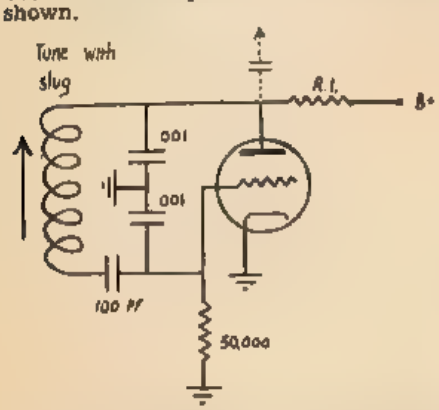
AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

HINTS AND KINKS

A SIMPLE B.F.O.

Remember the small slug-tuned coil in the American I.F.F. set? This makes an ideal b.f.o. coil for a receiver with an i.f. of 450 Kc. or thereabouts. It can be mounted on the chassis in the same way as it was in the I.F.F. set and if mounted near the b.f.o. tube a neat and compact assembly results.

There are three terminals on the coil, two being the coil ends and the third a tap. Although this tap would probably allow the use of the coil as an electron-coupled or Hartley oscillator, it has been successfully used in the circuit shown.



This will be recognised as the Clapp circuit arranged so the cathode is grounded. It can thus be used with a filament-type tube without the need of a second winding.

With the b.f.o. tube close to an unshielded detector, it was found unnecessary to couple the output, but in some cases a small condenser between the b.f.o. plate and the detector will be required. Resistance R1 should be chosen to reduce the plate voltage to approximately 50 volts, but should not be less than 15,000 ohms.—VK5JG.

SHIFTING THE FREQUENCY OF A CRYSTAL

Lower.—A coating of finger nail polish thinned down with cuticle remover will lower the frequency of a crystal considerably. Very little, if no effect, on the strength of the oscillation will be noticed.

Higher.—To shift the frequency higher, give one side of the crystal a few light rubs with a little Bon Ami.

TAPS ON TANK COILS

Taps on tank coils can conveniently be made by using a piece of sheet brass ¼" wide, looping it round the required turn of wire in the desired position and soldering.

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BOOK REVIEW

"FROM THE ELECTRON TO THE SUPERHET."

We recently had the pleasure of perusing a copy of "From the Electron to the Superhet." Perhaps "perusing" is not the correct word to use as we ultimately read the whole 700 pages. The book is divided into 42 lessons with test questions at the end of each lesson.

Each lesson deals with a specific subject and the whole course is specially based on radio service practice. The theoretical principles are therefore dealt with only as far as is strictly necessary, and are explained in a straight forward manner. Illustrations and circuit diagrams are freely used to simplify the understanding of the principles being explained.

This book was specially written for the radio serviceman who wishes to brush up his knowledge by self-study, but it should prove very popular with those engaged in any field of radio.

"From the Electron to the Superhet." is available only from Philips Electrical Industries of Australia (Pty.) Ltd., Philips House, 69-73 Clarence Street, Sydney. The cost is £3/10/- per copy.

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BACK COPIES OF "AMATEUR RADIO"

Copies of "A.R.," other than those listed below, are available at the Victorian Division's Rooms, 191 Queen St., Melbourne, at 9d. per copy, plus postage.

1945—October.
1946—February, March, June and November.
1947—January, February, June, July, August, September, November.
1948—March, May and September.
1949—February and March.
1950—July and September
1951—July.
1952—November and December.

All copies are available for the years 1953, 1954, and 1955.

DX ACTIVITY BY VK3AHH†

PROPAGATION REPORT

3.5 Mc. There is no doubt that the high noise level is the major reason for the small number of reports on this band. However, **European** break-throughs and openings to **North America** have been observed. Times for **Europe** were 1800-2000z.

7 Mc. This band allowed the usual DX to be worked, although a deterioration of conditions was noticeable. Times were: **American** sentiments 0600-1400z, and **Europe**: between 1800 and 2100z, with break-throughs around 0800z.

14 Mc. Conditions have deteriorated somewhat, as was to be expected. Nevertheless, fair openings were observed and reported. **North America** was workable between 2000 and 0100z and between 0500 and 1600z. Conditions for contacts with **South America** existed around 0400-1200z, while **Africa** was represented between 0500 and 1400z. **European** countries appeared around 0700-1400z.

21 Mc.: On this band, conditions were reasonably fair to all continents. Times were as follows: **Europe** 0800-1500z, **Africa** 0600-1100z, **South America** 0000-0800z, **North America** 2100-0400z.

27/28 Mc. Conditions to **Europe** existed around 1000z, together with break-throughs from **South-East Asia**. Openings to the **American** sentiments appeared between 2300z and 0300.

NEWS AND NOTES

At the time of writing, the Kista Dan is on her way to the **Australian Antarctic Research Base at Mawson**. Gordon VK1GA will represent the 1956 party on the Amateur bands. The 1955 expedition will return and is expected to reach Melbourne some time in March.

Bells were ringing in another year, and in mud, rain, and MUD the Federal Station of the Wireless Institute of Australia, **VK3WIA**, opened business at the Pan-Pacific Scout Jamboree at Clifford Park, near Melbourne. It did not take long for this call to be regarded as a rare one—in fact, real DX queues sometimes worried the operators! This W.I.A. show took place under the determined leadership of Doug 3DU, while the technical side was in the experienced hands of George 3AG. The Victorian Division was well represented by operators and assistants. And, largely because of their willing co-operation and patience, the show can be called a success.

The DXpedition to the **Kermadecs** is off—for the time being anyway! News will be published when available (info from W6YY).

Doug **VK1IJ**, a member of the 1956 Macquarie Island party, has commenced his DX activities. QSL cards may be sent to VK3ATN who will dispatch VK1IJ cards in reply, directly if reply coupons or stamps were enclosed, otherwise through the Bureau (from 1IJ and 3ATN).

The relief party at **Kerguelen Islands** commenced operation in January—call sign **FB8XX** (from W6YY).

VP2VB/P is now on his way to Tokelau Island (from W6YY)

FB8ZZ on Amsterdam Island has daily phone contacts with CN8MM at 1630z (from 5WO).

XW8AB intends operating on 7 and 21 Mc (from NCDXC)

LU2ZY and **LU3ZY** are active from **South Sandwich Islands** (from 2QL, W6YY).

VS9GV is active on phone from Aden (from W6YY)

† Hans J. Albrecht, 10 Belgravia Ave., Box Hill North, E.12, Vic.

* Call signs and prefixes worked.

z zero time—G.M.T.

ACTIVITIES

7 Mc.: Laurie **2AMB** reports KL7AZS*, and YU3AB, YU2ACD, YU3AJK, Jamboree Station (see Notes). **VK3WIA** worked JA5HW*, Eric **BERS186** adds DL4FY, II2PY, YU3APR.

14 Mc C W 2QL: ST2NG* VS9AS* FY7YF*, VQ6LQ*, VP9BM* ZD6BX* CR7LU CR7IZ*, ZD7DCP* LZ1KSP* YI2AM* FT5AH* VK-1RA* ZE3JE* CR6BX* and FB8ZZ FB8BR, FM7WF OX3WE KG1AR OQ5BT OQ5HU, VQ5*K VQ2SP VP5DC 2AMB HR1JZ*, XE1AX* LU3HR*, LU4FDQ* YV1AD* CE-3DZ* TI2PZ* KZ5IF*, HC1KD*, VP9BM*, and VQ6CB HB9GY FO8AK, IS1FAC VS3CV, VS6CO VS6DI VS1BJ, HC1LE, VP7NS, VU-2JG, OE3RE, 4X4DH, VQ6LQ, YV5BO, KP4ZW, KW6BV, LU5DB, LU8SA. Neville 2APL: VS-1BJ* JA* YV5BJ* G*, F*, OH* Bud 2AQJ ZC4IP* JA* VS1BJ* Alan 3CX CR6AI*, AC5PN* 3V8AA* FB8ZZ* FY7YE*, FY7YF*, PZ1BS* HP1EH* KV4* TI3MAR* SV8WY*, VQ4EO* KP4MV* KP4CC* VQ6CB*, HB1RP*, VP9BM* VP9BD* YV1AD* CO3YP* HK3CR*, KP4KD* OQ5HJ* JV8AB* ET2LB* VS9AS*, MD5UK* HC1LE* KP4ABA*, VQ4AQ* RS-1VR* CR9AE* KJ6BN* HC1KD* ET3GB*, ZS5ND*, plus Europeans* and VP5DC, OX-3UD, Jack 2JA: 4S7PT*, YV5AK* DL*, G* Ken 2KE VK1AWI* Stan 3TE DL*, EA*, EA6BD*, GI3DQE* IS1FIC* OE3RE* ON4*, ST2AC* VQ4FZ, YU3BH*, ZC4CK*, 4X4DH* Allan 2AHM VS5EW* KP4MV* HR1JZ*, ZC4IP* KZ5IF* KP4JF* MD5UK*, LU1SE*, KP4ZV* LU5AQ* KJ6BN*, TI2PZ* XE1CM*, XW8AA* KZ5GH*, HP1BR* LU2RD* KZ5DK*, OX1OS* HL2AA*, and Europeans. Ron 3ARV: TI2MAS* TI2PZ* YV5BJ* FB8BS*, VQ6AG*, JAs* and Europeans* Ray 2ATN ZD6AC* Tim 2AZY 3V8AS*, XW8AB*, DL*, OH*, and EA. 4X4BR, I. YI1AM, IT1TAI, ON4. 5WIA: JA* VE*, OE1BH* ZS2X* I*, DJ DL* PA5*, SM* KP4* VS1* VU2* FA8RJ* KL7* KW6*, YU* KR8* VQ6CB* VK1AWI*, VK1EM*, VK1JW* VK1RA* ZS2K* OH8* 4X1* CO*, G* LU2MC* TF5TP* FO8AO*, KT1* PY*, ST2* Bob 4RW FA8HN* YV1AD* ZS6ANZ*, ZS6AJQ* ZE3JU* FB8BR* VS1BJ* VS6AS*, VQ3JTW* ZS3VC* 9S4AX* VU2BL* ZC4IP*, 3W8AA* VQ2ST* MP4QAI* Syd 4SE JAs*, 4S7MK* CR6CV* CT1* DLs*, CE3DZ*, KP-4MV* VS1GU* VS1GV* VS1BJ*, VQ2EW*, ZC4IP* ZS6CA* ZS6DG* ZS4IF* ZS1PB*, 1S1REX* ET3TRC* ET3AH* ET3LF* VQ4DT*, KW6BV* ZS5PN* VQ6LQ* YU3MD* DU*, YV5FV* G* SM* KV4* KJ6BN* KP4MV*, VP9BM* 3W8AA* TI2PZ* GM3CMB* and OX1TR ZS6OX ZE3JC YI2AM, VQ4FT, ZS-3HX, VE3TL, CR7AH, VQ5DS, CS3AC, VU2JI, AP3C, EA, ZK1BL, LU1SE, 3V8AB, OE, VQ6CB, SV0WL 4X4RF FB8ZZ CR5BJ HC1XD, GC-3KAV FD1BD, SM6AI Doug 4BT YA1AM*, VQ6CB* YV5BJ* YV1AD* FB8RS* ZD3A*, VQ5EK* ET3LF* ET3LB* 3W8AA* PZ1BS* Rob 5RG ZS6MS VK1EM VK1AWI Ray 5BK JAs Austin 5WO VP9BM*, CR6CV*, HH3L* 3W8AA* FB8ZZ* Col 7LZ 3W8AA*, GI3DQE* MP4BBZ* IS1FIC*, YJ1DL*, and MP4QAY, FO8C/FC. BERS186: DLs, GI3DQE, DU KR6QC, SM, VQ6LQ, VS1BJ, VU2JG, XE-1AX, 3W8AA, SM6AIS. Dave Jenkin: GI4RY, DL, KV4, VS1BJ, PJ1AJ, AP2QA, VS1GV, AC5PN, Rod de Belfour FB8ZZ, VP5DC

14 Mc Phone 2AMB YV5AB*, YV5FK*, TI2RMA* TI2FS* GM* PY2AHS* KP4ABD*, CE4CY* KT1WX* and KP4WAE KG4AF, VU4AK XZ2KN YV5AY VS6CG, CO8CC, KP-4IS KP4WD ZP5JM CT CN8MM 2APL LU-1QG* Harold 2AHC FO8AD* DLs* Fs* EA*, LU**DJZ* LU4ES* KP4QA*, KP4PT* KP4-ABD* HP3FL* HP1EH* VS1*, YV5FK*, YV5BS* YV1AO* OA1K* OA1A* TI2RMA*, FA8ON* 5A1TA* CT2AG* VP6TR*, HH2JL*, HH2JH* KZ5KJ* KZ5WA*, KZ5FA*, XE1AP*, XE1RE* XE2NT* HR1CB* YS1A*, TG9EA*, TG9TU* ET2IS* ET2MZ* G* KV4* CN8MT*, CN8MM* AP2BP* AP2CR* CE3PV* YN4CG*, HK3FV* HK1PC* CO* VU2* CT*, GM*, GW*, VS4GS* VS2BA* XZ2SS*, XZ2OM*, XZ2KM*, KT1EXO* VP7NS* KW6BV*, DU*, PA0*, YI-2AM* VQ4FK* 4X4GC* 4S7GD* OD5DA*, FB8B* ZS4AF* ZC4RX* Ray 2ATN FM7WF*, ZD6RD* HH1HB* PX1YR* FB8ZZ* CR7*, CR6* ZS6Q*, KL2B* HI6* FB8BE* ET2TRC*, VP7* HH1W* 3AZY OE* XE2KW* PJ1Y*, 4X4DK* VS1CZ*, 3W8AK*, EI3W* Is* Gs*, ZS5PN* ZS2FA* CR7CZ* ZS2DY* XZ2OM*, MP4BBF*, ZS5DE*, DL*, ZS6ANE*, YI2AM*, XE2NT*, ST2DB*, and VQ2HJ, ZS6JL, CR-7AO, EA2CQ, FO8AD, VQ4RF, ET2AB, LU7AJ, CN8MM PA0 EA, ON MP4KAB F VQ4AQ, 4RW VQ5EK* KZ5DK* ET3AG* ZS6JI*, LU4VL* DL* 5WO OD5AB*, YI2AM* VQ-5EK* ZS5JM* ZS5DE* KP4ABD* ZS5QT*, CR7CZ* HH1HB* XE2KW*, CN8MM* VP2DC*, KP4CU* ZS2FA* ZS6XL*, ZS6G*, ZS2BJ*, ZS2DY* VQ4ERR* VQ4FK* ZS6ANE*, ZS6-AJX*, VQ4ZFW*, CO*, VE*, ZE3JL*, FY7AP*, ZE4JA*, XE2NT*, ZD4BZ*, OQ5FM*, YN4CB* 7LZ: KP4ABD*, KZ5EA*, TI2BX*, 4S7GD*, TI2RMA*, LU3DB*, MP4KAB*, HZ1AER*, VP-7NS*, VP7NK*, TI2LDT*, 4S7YL* WIA-L3019: VQ6LQ, XZ2SS, VS1, FM7WQ, ST2DB, VU, ET, XZ2KN, FA8AY, VS3, VS6, ET2XX, ISNR, ET-3CC and Europeans. Dave Jenkin XZ2KN, LA7AP, DL. Rod de Belfour HP3FL, VP7NS, VU, HP1EV VS5UW, VU, CO, F, OH, YI2AM, VS6, HZ2AEH, VQ4AQ, CN8MM, ET2MZ, HZ1AH, OD5AB

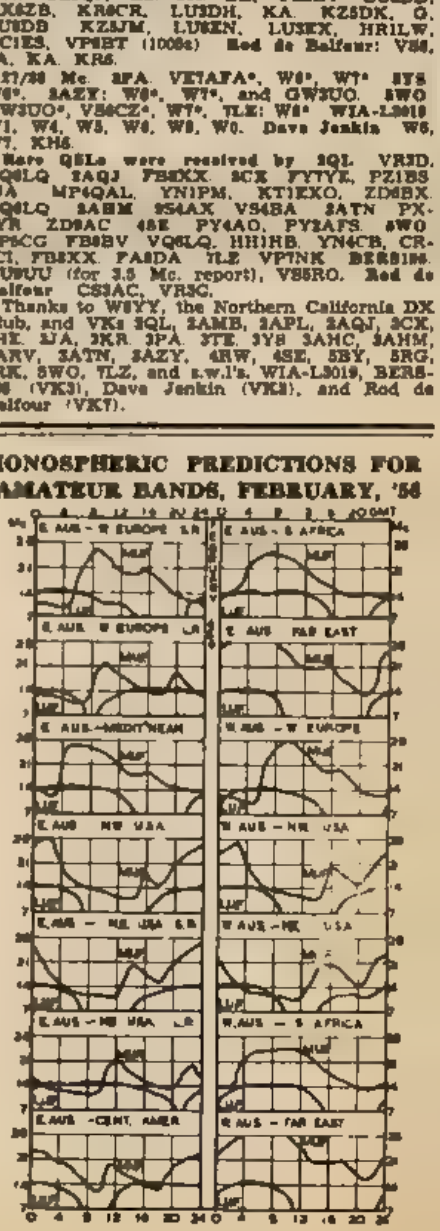
21 Mc.: 2QL: ZS6ANN* 2APL* G*, DJ*, ZS6LK* JA*, CR9AH* 2AQJ VS6* Bert 2NE Ga*, HB9*, and YI2AM. 2JA, MP4BBX*, KA*, VS6*, G*, OH5NQ*, OH5NW*, HC1FS*, KZ5CS*, LA3YE*, DL*, LU6DD*, LU3DD*, OH1RU*, 5M*, Percy 2PA: ZS3G*, VQ2GW*, a long series of ZSs*, LX1BI*, CX3BH*, CE3DY*, CE3AK*, VP5WR*, VP8RG* YV5AY*, KV4*, KP4AZ* KP4KD* LU5DDG* LU3DH* LU-8DB*, LU3EX* HR1LW*, HC1FS*, HC1ER*, HC1ES* KZ5CS* KZ5DG* BV1US* DU*, KR8* VS2* 4S7*, MP4BBW*, 4X4BT*, ZB1TD*, GD3GMH* VU*, ON4*, OZ*, SM*, LA*, EI*, F*, DL*, YU*, G* 2ATN KV4*, ZS3Q*, VP-2AQ* 2AZY SM*, G*, EA*, I*, DL*, ZS*, KR8*, DU*, ZS3Q*, KA*, 4S7AB*, VS2BD*, OH2NI* CR9AH* F*, VU2CW* VP8AQ*, 4X4BT*, KV4*, YU1AD*, KZ5DK*, I*, HC1FS*, YV5AY* OE3FJ*, ON* OD5AJ*, GW*, CE3CZ*, HB9FU* 4X4BO*, HB9PU* MP4BBW*, 4X4IB*, BV1US* VS1GR*, KR8RM*, HB9NT* 5WO, KV4* KP4AZ*, G* I*, HB9ET* GD3GMH*, ZS*, ZS1AQ* KZ5JM* 7LZ CX1AX*, LU-3EX* VS2DD*, LA5YE* WIA-L3019 DU VS6. Dave Jenkin CE3CZ, KV4, GD3GMH, DU, F, VS6, CE3QJ, ZS, JA, DL, CE3DY LU3DD, KX6ZB, KR6CR, LU3DH, KA, KZ5DK, G, LU1DB KZ5JM, LU5EN, LU3EX, HR1LW, HC1ES, VP1BT (1000s) Rod de Belfour: VS6, JA, KA, KR6.

27/28 Mc. 2FA, VE1AFA*, W6*, WT* 5Y5 W6*, 2AZY: W6*, WT*, and GW3UO. 5WO GW3UO*, VS6CZ*, WT*, 7LZ: W6* WIA-L3019 W1, W4, W5, W6, W8, W0. Dave Jenkin W6, W7, KH6.

Many QSLs were received by 2QL VR3D, VQ6LQ 2AQJ FB8XX, 3CX FY7YE, PZ1BS 5JA MP4QAL, YN1PM, KT1EXO, ZD6BX, VQ6LQ 2AHM 9S4AX VS4BA 2ATN PX-1YR ZD9AC 4SE PY4AO, PY2AFS, 5WO ZP5CG FB8BV VQ6LQ, HH1HB, YN4CB, CR-7CI, FB8XX, FA8DA 7LZ VP7NK BERS186, DU9UU (for 3.5 Mc. report), VS5RO. Rod de Belfour CS3AC, VR3C.

Thanks to W6YY, the Northern California DX Club, and VKs 2QL, 2AMB, 2APL, 2AQJ, 3CX, 3HE 3JA, 3KR 3PA, 3TE, 3YB 3AHC, 3AHM, 3ARV, 3ATN, 3AZY, 4RW, 4SE, 5BY, 5RG, 5RK, 5WO, 7LZ, and s.w.l's. WIA-L3019, BERS-186 (VK3), Dave Jenkin (VK3), and Rod de Belfour (VK7).

IONOSPHERIC PREDICTIONS FOR AMATEUR BANDS, FEBRUARY, '56



Specially designed water jets in action prior to being lowered under water to cut a trench for cable-laying.

Keeping you in touch with what's going on

More than 5½ million miles of copper wire run under the Australian continent

Bringing quicker means of communication, these underground telegraph lines which link State to State, have increased the pace of industry.

They form a major part of our Post and Telegraph system — a Government Department which has grown from small beginnings to one of the busiest and most important institutions of our personal and industrial lives.

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Many of these employees are electricians and engineers whose job is to service our cable and telegraph systems.

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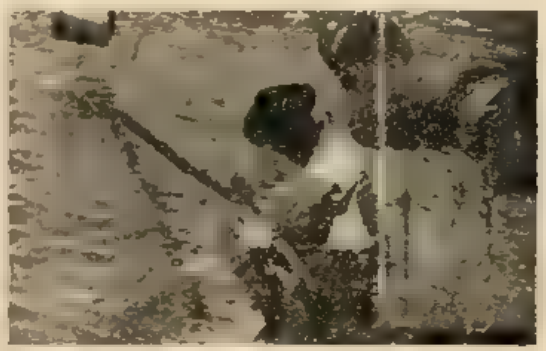
Used for junction box filling, pressure cable end sealing and terminal block casting in new installations, it means longer life and less maintenance.

Because of their unusual qualities, SHELL synthetic resins preserve as well as protect our lines of communication

**Epikote*



Laying cable under the Coomera River, Q'land.

FIFTY MEGACYCLES AND ABOVE

Reminder: 50-54 Mc. Band closed on 31st January, 1956.
See you on 56-60 Mc. Band (now open).

VICTORIA

Fred 3YS has built up a very nice tx for himself in which he uses an 8 Mc. xtal in the 6AG7 grid plate osc. circuit, tripling in the plate circuit to 24 Mc. This is capacity coupled to a 6CL6 which triples to 72 Mc., capacity coupled to a 5763, doubling to 144 Mc. The output to the 5763 is link coupled to the grid circuit of the final QQE06/40. The p.a. input is 75 watts. This is modulated by Class B 807s driven by 6SN7 cathode follower circuit. The whole tx is housed in the well known TU5 tuning unit cases bolted together in the form of a three tier table rack. Sprayed over with grey lacquer and with new front panels and neat name tags, the tx has a very professional appearance and the workmanship is of typically the Fred Ball high quality.

Ron 3ZBH has passed the morse test and is now 3AHJ. He is busy working on gear for 80, 20 and 21 Mc. bands.

The Xmas Fox Hunt was full of intrigue from beginning to end with the accent definitely on merry making. The fox 3LN arrived at the starting point on foot, having parked the car in a lane nearby. This was to give the impression that he was using a different make of car but this was not so, Len had used that gag last year. After he had given out the sealed envelopes containing the location of the final rendezvous, he made post haste back to his car and off to the first hiding spot at the rear of the Hawthorn tram sheds where his XYL and harmonics were laying out 300 yards of coax to a temporary antenna and also cutting piles of aniseed with which they completed covered the car which was also hidden in amongst tall aniseed bushes.

After Len's departure, the XYLs in at the starting point belonging to the hound parties got an idea. If the fox was allowed to waive the rules at this Xmas Fox Hunt, well why not the hounds too. They suggested that one hound open his sealed envelope and find out where the final rendezvous was to be held and that they all gang up on Len and arrive there first to give him a surprise. 3VZ was all for this, but some of the other OMs (bless their kindly hearts) apparently had a conscience and felt it wouldn't be quite fair to Len. What a shame, a real spicy idea that one.

3VZ was the first one to discover the fox at the initial hiding place and was followed by most of the others. Quite a while was spent at this hiding place as the temporary antenna with the extended lead put the hounds off the scent and had them searching at the opposite end of the enclosure till they finally tracked him down via the coax lead. The second hiding place was at the rear of the Zoo where Len had posted up "no road" notices at either entry to his hiding spot. Rather obvious the fox had no conscience whatsoever. He managed to remain here undiscovered for a quarter of an hour and it was not until he was moving out that 3ADU caught him.

The third hiding place was at the side of the Maribyrnong River. Here some real sculduggery went on. Len had previously arranged with 3ALY to transmit tone on the same frequency at intervals while Len would go off the air. 3ALY was strategically situated on the other side of the river and this really caused a heck of a lot of confusion. Hounds buzzed unsuspectingly around 3ALY, at times even asking him if he had seen the fox. The final location was at the fox's home where 3ADU was proclaimed the winner for the night and the hunts for 1955 wound up on a very happy note in keeping with the Xmas season with all looking forward to the next round in the New Year which will begin on the second Wednesday in February, the 8th.

How about joining in on the hunts for 1956? Start building some gear now, a rx on 144 Mc. is all you need for a start, the tx can come later, it is not at all an essential part of a fox hunt. Because of this, these hunts can be entered into with very great interest and enjoyment by associates, short wave listeners, members of the A.O.C.P. class, etc., and they can have equally as entertaining a night as those holding a license. You can bring your XYL and family or your friends, the only other essential of course is a mobile contraption such as a car or motor bike.

The hunts are run on a competitive form with points awarded for each time the fox is caught. They conclude with a get-together at a prearranged Amateur shack. We all bring our own plate of supper, this makes it less trouble for the XYLs who so kindly offer their homes for the final rendezvous. The assembly point is at the plantation in College Crescent at the rear of the University at 8 p.m. on the second Wednesday in each month.

80 Mc. News.—Early in December there occurred the first opening on 80 Mc. for this season between New Zealand and VK3. ZLs 1, 2, and 4 were worked with signal strengths around S9. Since then there have been further openings and also to VK2 and VK4.

Stan 3AFL has a couple of GL446A tubes and hopes to apply them on 576 Mc. later on. Hugo 2WH was in Melbourne for a short visit recently, also Tony 3ZAZ, who had his portable gear with him and was heard working several of the Melbourne chaps from mobile positions around the suburbs. David 3ZAY has recently returned from a mobile tour through VK2 and VK4 where he made many contacts from his mobile rig and is now eagerly awaiting the arrival of the QSLs.

The final V.h.f. meeting for 1955 took the form of a visit to the City West Exchange where Mr Alan Hart and Mr. Peter Barnes showed the Group around and explained in great detail the working of the micro-wave link equipment. The 23 channel system was of great interest to the fellows and also of particular interest were the c.r.o. patterns of the entire system in operation, where it was possible to see the frequency modulation of each of the timing pieces. The fellows climbed a narrow ladder to the roof top to view the parabolas which are 28 feet in diameter. There is provision for many more to come for service to various country locations. From this vantage point on the roof top some 130 feet above the city streets they gained a wonderful view of Melbourne at night with its thousands of twinkling lights.—Phyl Moncur

144 Mc. Activity.—This month and last have been notable for the enterprise of 3GM and his keen friends, Ron and Ian, who have taken 288 (as well as 144) Mc. gear out portable to Mt. Buninyong and Mt. Warrenheip (near Ballarat) on Thursday and Sunday evenings, weather, etc., permitting.

First station worked was 3ZAI (at home) on 23/12/55 with 5 x 5 reports over the 64-mile path. 3GM used 4 over 4 beam and 3ZAI 8 x 2 40 ft. up, 7183s and r.b. used at both ends. On following Sunday, 3QO was heard weakly. Next week gear (inc. car batteries) was carried up 100 ft. tower on Mt. Buninyong and erected there (after ejecting the two four-legged mountain goats that live there); this extra 100 ft. lifted sigs three S points and 3ZAI had one-hour contact; 3QO was 5 x 6 with 25w. input to 832 final, but could barely hear 3GM.

Next attempt was on 8/1/56 when a fierce electrical storm made the 300 ohm ribbon on top of the tower glow like a neon tube from end to end and Ron and Ian got a few "bites," so they copied the mountain goats and Taced down the tower to safety. As they said, "they sure had some soup on the line, but they could not control it!" Finally, the gear was set up on ground and test made with 3QO with no results. Antennae were changed to horizontal polarisation and 3QO became 5 x 8 and 3GM 5 x 5 with QSB. Tests were made with 3AAP and 3ZAI, but no contacts.

On 29 and 30/12/55 3AUX went portable to Montrose at foot of Dandenongs and worked 3ZAI and 3QO. Sigs on 18 mile path from 3QO-3AUX were R5 S5 with QSB, S8 to 5 out using vertical polarisation. When antennae were changed to horizontal, signals rose to S8-9 and rock steady and next night results were the same. On the present indications, where signals have to go over difficult paths, horizontal polarisation seems to be desirable, but further tests are needed.

Stations active include 3ZBN (Nunawading) with 16 el. vert. pol. beam, and 16 el. hor. pol. beam, also one badly cut finger, caused by trying to haul feed line through glass louvre window! 3ZAI, who has a xtal rig on 291 Mc. with 6J6 final driven by 6J6 tripler (f.b. John and Ray). 3ZAQ has been busy with 6J6-6J6 rx. 3AUX out portable. 3NB with ant. up 40 ft. 3ZAN occasionally on. 3AAP has antenna up 50 ft. 3ZBK has a new rx. 3AHL on occasionally. 3ZAE helped 3ZAI much with his xtal rig. 3ADU out portable, plus quite a few of the 2 mx gang on their 2nd harmonics!—3QO.

SOUTH AUSTRALIA

As your regular scribe 5MT is away on vacation, I've been appointed as stand-in. It seems that 288 Mc. is the most consistent of the v.h.f. bands and the number of portables on every week-end, including a mobile marine, makes for interesting contacts. George 5GB has just completed a 32 el. Yagi on 288 Mc. Col 5RO and Ian 5ZAW heard working crossband duplex and are both revamping xtal rigs for 288 Mc.

144 Mc. has the usual rash of regulars. Reg 5QR has been heard testing his latest 15 el. phased array and Keith 5HT is at present making personal contact with N.S.W. country v.h.f. boys. Clem 5GL and your scribe have mobile rigs working on 144.2 Mc., but were both trying to clear up ignition hash which seems very persistent on 144 Mc.

80 Mc. indicates patchy openings so far. 5RO, 5QR and Hughie 5BC seem to have the band to themselves in VK5. Activity may improve when the change of band position is clarified. —5KC.

WESTERN AUSTRALIA

The first tx hunt on 144 Mc. of the V.h.f. Group was a notable success! Eight cars participated in the actual hunt and the total number of cars involved in the evening can be judged when it is pointed out that Syd 6SJ had two of his sons, Bob and Jim, directing the cars so that they could all park on the vacant block next door to his place. A very welcome visitor was Wally 6AG who, as well as being one of the very first Amateurs in this State, must have been one of the earliest to work 144 Mc. mobile.

The tx, which was hidden in Maida Vale, was found by Ralph 6ZAD and his team—Lionel 6ZAE, Len 6ZAT and Don 6ZAK—five minutes before time. Ralph was the only one to find the tx. Congrats Ralph! The most striking part of Ralph's equipment was the way he mounted his 4 el. beam. This was attached to a hollow piece of dural which then slipped over the car whip.

After the hunt, about 40 people attended the Xmas party of the Group. A most enjoyable time was had. Yarns were swopped and the gear in the various cars was inspected. Thank you very much, Mrs. 6SJ and Syd, and to the other XYLs and YLs who helped with the supper!

80 Mc. This band opened later this year than in previous years and the first contact from Perth was 6HK to ZL2ADA on 11th Dec. The band has since opened to all States except VK3 and VK8 (Northern Territory). Rolo 6BO is having considerable trouble with power leak noise from some 66kv. mains which are a few hundred yards east of his beam. Comparison with Don 6HK has shown that signals which are S6 at Don's cannot be copied at Rolo's. It is very disappointing.

144 Mc. Activity has increased with the advent of the Ross Hull Contest and numbers are being exchanged with enthusiasm. Don 6ZAV is the likely winner of both the open and limited sections at present unless those on 5 metres really get cracking. Have heard 6GB busy on 6 metres. When are you coming on 2 mx again, Jack? Wally 6AG has made a welcome re-appearance and came on one evening mobile. Don 6ZAV and Ralph 6ZAD and Roger 6RK had an interesting time working him as he moved around Perth. Bob 6BE and myself, who were mobile also at the time, were disappointed at not being able to work Wally due to difficulty with the modulator.

Don 6HK has completed his mobile tx and has had excellent results with it. It is hoped that by the time this appears in print that it will have been heard and worked by a large number of VK5s and VK3s. I mean that! During the month, 6HK and myself hope to be mobile as we travel from Perth to Melbourne and return.

288 Mc.: Most noteworthy event of the month was the reception of Don 6ZAV's xtal tx by 6ZAA in Fremantle over the difficult 15-mile path. Two way contact must eventuate. 6ZAA

TASMANIA

The surprise 2 mx opening to VK3 on Sunday, 11th Dec., almost caught the 2 mx gang at Launceston unprepared. 7PF had only put the 5 over 5 back up on the 8th, and 7GM had only put up his new skeleton slot stacked array on the afternoon of the opening. 7PF heard 3YS at 1832 with test signal, from then up to 2119. Stations heard were 3BH, 3ZAA, 3ZD, 3DG, but calls by 7PF, 7GM, 7LZ, and 7BQ met with no response. 7PF then heard 3ZBE calling 3VL and gave a call on the off chance, and succeeded, signals being 5 and 5.

Conditions were not the best, the opening was probably due to a pre-frontal inversion crossing Bass Strait, making signals unstable.

Quite a few stations were heard which would have been OK for a quick c.w. QSO, but unfortunately they could not be raised.

The best VK3 was 3GM portable, who at one time heard 7PF at 5 and 9. 7PF, 7LZ, 7GM all worked 3GM, and 7PF worked also 3RK, 3ALY, 3ZBE; others heard were 3ZAE, 3DG calling 3CI on c.w.

(Continued on Page 16)

SHORT WAVE LISTENERS' SECTION*

Well chaps, it's over a year since s.w.l's. were given the opportunity of having their own section in "Amateur Radio." It is our job to make material available for this column, and that means that all s.w.l's. in Australia can play their part in keeping these notes informative and interesting. So how about it? All you need do is take up your pen and compile a short list of stations you have heard, for a start, and also, why not send us a short description of that super-duper gear you are using. Which type of antenna do you use and prefer to use? Don't keep all these details secret. Let us know all about them.

Hearty thanks are proffered to all who have contributed to our notes in the past, and it is hoped that you will continue to assist us in this way. So when our regular compiler of the notes returns from his holidays, why not deluge him with a shower of details from where you are? Contributions for this page should be forwarded to John Wilson, 37 Rayment Street, Alphington, Vic.

And now! Attention all Amateurs! Would you like to assist the S.w.l. Group? Remember you too were a listener at some stage or another. We would like to hear from any of you who would be willing to receive a visit from a small group of listeners, say a party up to six in number, to see your equipment and yourself in operation. If that is not possible, just seeing the equipment would do. There must be some of you who would be capable of coming to one of our meetings to give an elementary talk on any aspect of Amateur Radio communication. We have quite a few persons in our Group who would be very interested in learning how to give a useful report to a transmitting station, or the correct way to align a superhet, or again, how to erect a really efficient receiving antenna. If you can help us, go ahead and write to John Wilson, or if you are on the phone during the day ring Ian Hunt at FB0281, ext. 367, and find out just what we do want of you.

THE LATEST ON THE BANDS

A very interesting station to appear recently on 14 Mc is that operated by Danny Weil on board a forty foot sloop called the "Yasme." When first heard by myself, Danny was using the call VP2VB/P. He has since put foot on Tahiti soil and for the present is making himself known on the air as FO8AN, under which call he has contacted at least one ZL station. I haven't yet heard any of the local boys chasing him though. He states that he is running 65 watts, operating phone and c.w. and will probably be in Tahiti for about three months. This information was heard on 17th Dec., 1955. It is understood that Danny is sailing single handed around the world and will call in at many different places on the way. So keep listening out and you may land him under a rare call sign. Further details of operation from that station may be found in "CQ" magazine for September, 1955.

In the absence of reports from other listeners, I am publishing the following list of phone stations heard by myself on 14 Mc. This list dates back to the 3rd December. VR2BG, CE-3JJ, KH6SL, KP6AK, KH6BES, GM3MN ZP-5CF, LU2FR, LU5DL, LU5MZ, DL4DM, VK6FN, VK6MK, KA5JD, BV1CE, OD5DA, YN4CB, HK-3PC, KZ5LI, XE2JK, HP3FL, AP2Q, CS3AC, CT1PK, CT3AN, CX2AX, EA7DT GD2FRY, GW4CC, HC1ER, HH1W, HR4WH, JA1CP, KJ-6BN, KR6RP, KT1WX, KV4AA, OE5JK, SM-3EP, SM6SA, VK1IJ, VK2DB, VQ4AQ, VU2CQ, VU2SS, YV5AB, 3V8AB, ZL1, 2, 3, 4, VK3-7, W1, 4-7, 6.

This should indicate to you that 14 Mc. is much improved of late, so dust the cobwebs out and try for a few of these calls yourself. In case you are interested my rx is a 4 valve, d/w superhet, with line up as follows: ECH35 r.f., mixer, osc., 6SK7 i.f. amp., 6SQ7 det./amp., 6AG6 audio amp. The rectifier is a 6X5. At the moment I am using a half wave, centre fed antenna cut for the 14 Mc. band. The feeders are spaced with plastic spacers obtainable after you have eaten a popular brand of chocolate coated ice-cream. The antenna runs approx. N.E. to S.W.

The feed line for a receiving antenna may be made quite neatly using the said plastic sticks for spacers and if the right gauge of wire is used, a 600 ohm line will result. Does anyone know if these are OK for transmission? (The spacers, I mean.)

Well, I will end these notes with the news that cards are on hand for members of the VK3 Group from the following stations: MP4-BBF, 4X4FV, I1TAP, OH6NS, VK2KG, VK3YS, and VK3ACS.

Thanks boys for being interested enough to send a card to a s.w.l. and thus providing encouragement. A happy 1956 to anyone caught reading this page, be he Amateur or S.w.l. May the best of DX go your way and let's hope that old Sol will turn on a mighty fine season for us.—Ian J. Hunt.

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FIFTY MC. AND ABOVE

(Continued from Page 15)

A week later on the 16th, 7GM heard 3GM again portable, at 2000 and 7LZ heard George at 2100 but no contacts. The portable operation of 3GM paid off again when on 29th Dec., he was worked by 7PF at 2100, and was heard at 2200. 3BW was worked also by 7PF at 2124. Signals were again not very stable, the barometer being only 29.7 inches.

Due to complaints of QRM, 7PF has now QSYed to 144.424 Mc. Associate Perce Woodruffe has passed the L.A.O.C.P. and is waiting a call sign. He is 30 miles from Launceston, down the Tamar River at Beauty Point, and should be a good contact for test purposes and maybe a good contact for VK3s. 7GM does a good job working any VK3s at all, as he fires into a 100 ft. hill. 7LZ has stabilised the tx to prevent chirp, and has discovered that 300 ohm feeders don't like being near other objects. He also reports that 6 mx is not the best and he is ready for 5 mx, but has not worked any DX as yet.

7GM has put 6146s in the modulator to increase the modulation. 7PF has an automatic CQ sender and is experimenting with a band-tuner. A parasitic repeater array consisting of a 3 el. beam feeding into another 3 el. beam, one in the direction of Launceston, and we hope broad enough to cover VK3, and the other is beamed onto Hobart, has been erected by 7LX and 7PF on top of Mt. Barrow, about 4,600 ft. high. We hope to run some skeds with southern VK7 and see what happens.—7PF

* Compiled by: Ian J. Hunt, W1A-L3007, 101 Robert Street, Northcote, Vic.

FEDERAL, QSL, and DIVISIONAL NOTES

FEDERAL

VK3WIA IN RETROSPECT

Now that the mud and dust of the Boy Scouts' Jamboree has settled at Clifford Park, it is possible to take a backward view of the operations of VK3WIA.

With 480 contacts and 38 countries (including W.A.C. and 30 U.S.A. States), over a period of 136 operating hours, it is obvious that VK3WIA was particularly active and successful during its 10 days of operation. Conditions were very trying both from a physical and electrical standpoint, but the above figures speak for themselves.

Much of the equipment was kindly loaned by the Services and was set up by Executive and members of the Victorian Division. Difficulties experienced were overcome by the ingenuity of members and delays were minimised. In regard to the setting up and operation of the station, it would be impossible to thank in detail all those whose efforts varied from swinging a pick to punching a key, but due acknowledgment is made to all who unselfishly gave their time and energy to the project.

It would however, be inappropriate not to mention the efforts of two members. Firstly, 3AG, George Glover, made responsible for the equipment side, spent many days in organising, arranging transport for, and installing the station. On his effort rests much of the success of the scheme. The other member who gave considerable time was 3ZA, Lance Frith. By working during the early hours of the morning when conditions were good, Lance was able to amass contacts at an astounding rate. He must be thanked for the very large number of countries worked.

Apart from the goodwill gained, the effort of taking VK3WIA into the field has paid tremendous dividends in experience and understanding and these will stand in good stead in future operations.

VISITORS

Some of the members of Federal Executive had the pleasure of meeting W6NZP and OM (Evelyn Scott and husband Harold) during their brief visit to Melbourne just before Christmas. Interested in radio both professionally and as a hobby, much time was spent in comparing conditions on either side of the Pacific.

W6NZP expects to be travelling north through Queensland and New Guinea during the coming months and will be glad to meet any VKs on the way.

Another visitor of note was the Federal Councillor of VK2 Division, 2ASW, Don Pollard. Although he had but little time at his disposal following his return from VK5, he managed to visit Clifford Park and see VK3WIA in action, and meet some of the operators.

SUCCESSFUL AMATEUR CANDIDATES

The following is a list of candidates who were successful at the examinations for the Amateur Operator's Certificate and Amateur Operator's Limited Certificate held in July and October, 1955.

12th JULY, 1955

New South Wales

J. R. Grouse, Brent Street, Boggabri.
G. A. Dowse, 6 Bungalow Road, Ballina.
J. C. Keariness, Post Office, Tomingley
*S. D. Glyde, Private Bag, Bowraville.
*J. G. Pratt, "Inglewood," R.M.B. 23, Ilsabo.
P. C. James, 12 Stanley Street, Chatswood.
J. S. Cuming, 8 Sortie Port, Castlecrag.
*G. P. Pearson, 17 Esher Street, Burwood.

Victoria

W. J. Carlyle, 21 Purcell Street, Benalla.
L. E. Lloyd, Murray Valley Highway, Nyah.
*J. Grigg, 29 Alamein Street, Morwell.
*B. D. Alexander, Box 15, Skipton.
K. J. Love, 27 Bishop Street, Oakleigh.
*N. R. Dench, 27 Glenbervie Road, Strathmore.
*J. R. Wales, 24 Park Lane, Mount Waverley.
*T. J. Hunt, "Yamala," Olivers Hill, Frankston
*G. A. Lane, 12 O'Shannessy St., Nunawading.
*A. D. Pridgon, 273 Mont Albert Rd., Surrey Hills.
*R. F. V. Crew, 11 Clifton Gr., Hawthorn East.
*W. A. Farres, 26 Jeffers Street, Noble Park.
A. R. Jarman, 8 Edward Street, Horsham.

Queensland

S. E. Brigg, 21 McKelliget St., Rockhampton.

South Australia

B. G. Waight, C/o. Mrs. O. Cosgrove, 8 Hilbert Street, Hove.
D. G. Goode, Yankalilla
W. D. Randall, 38 Felton Street, Largs Bay.
*J. A. Beasley, 7 Francis Street, Cowandilla.
*J. McN. Rowe, 62 First Avenue, St. Peters.
*G. R. Pope, 16 Seaview Grove, Blair Athol.
*R. B. Connor, 60 Matthews Avenue, Seaton.
*R. W. Hereus, 317 Kensington Road, Kensington Park.

Western Australia

J. W. Hughes, 373 Marine Drive, Geraldton.
A. A. Entwistle, 22 Charles Street, Midland Junction.
*T. C. Berg, 72 Fourth Avenue, Mount Lawley.

11th OCTOBER, 1955

New South Wales

D. M. MacMillan, 28 Vernon Street, Cessnock.
B. C. Fleck, 20 Yooloona Street, Griffith.
W. B. Jones, C/o. Griffith Producers' Co-op. Pty. Ltd., Griffith.
*R. F. Ruff, 68 Toowoon Bay Road, Long Jetty.
*W. S. Lane, 15 Hyman Street, Tamworth.
*K. G. Laycock, 20 Bremer Street, Canberra.
C. F. Luck, St. James Flats, 6 Stanley Street, Sydney
*R. R. F. Norman, 23 Queen Street, Croydon.
*A. F. W. Reynolds, 150 Rose St., Darlington.
*N. R. Fenton, 300 Cabramatta Rd., Cabramatta.
*N. F. Wilde, "Wyoming," The Village, Blayney

Victoria

R. J. Edney, Mandeville Street, Hopetoun.
M. E. Pfeffer, R.A.A.F., East Sale.
B. D. Alexander, P.O. Box 19, Skipton.
*M. A. White, Mitchell Street, Ouyen.
*R. C. Owen, No. 3 Radar Conv. "A", School of Radio, R.A.A.F., Ballarat.
*W. G. Francis, Woolamai Road, Dalyston.
P. K. Davies, C/o. 31 Jackson Street, Toorak.
T. J. Hunt, "Yamala," Olivers Hill, Frankston.
R. J. Harrison, Lot 2 Railway Pde., Glenroy.
*J. M. Hamilton, 17 Byfield Street, Reservoir.
*D. Christy, 49 Oberon Avenue, St. Albans.
*N. R. Kay, 4 Curraweena Rd., Caulfield Sth.
*W. J. R. Michie, 36 Sussex St., Mid. Brighton.
*F. C. Laycock, Windsor Road, Boronia.
*D. R. Town, 1233 Hoddle St., East Melbourne.
*D. G. G. Johns, Johnsons Rd., Sth. Warrandyte.
*L. J. Bills-Thompson, 6a Fairmount Road, Hawthorn East.
*G. J. Davis, 159 Dawson St., West Brunswick.
*I. de G. MacMillan, 6 Hamlyn St., Essendon.

Queensland

N. T. Casy, C/o. Martinez Radio and Elec., Byrne Street, Mareeba.
*F. J. Edwards, 1 Market Street, Warwick.
D. W. Presland 18 Jeffries Street, Yeppoon.
W. G. Heston, 5 Spring Street, East Ipswich.
I. C. Morrison (Dr.), "Avon Lodge," 171 Riding Road, Hawthorne.
R. J. Linnket, 6 Clay Street, Ipswich.
*T. R. Cuttle, Robertson Road, Ipswich.
*A. M. Simpson, 19 Little Street, Albion.

South Australia

B. C. Jellett, Norton Vale, Hynam.
*R. S. Lawton (Rev.), Methodist Parsonage, Border-town
C. G. S. Sapplatzer, 7 Bennett St., Hilton.
J. McG. Moffatt, 8 Swan Ter., Port Adelaide.
*G. P. Yelland, 19 Lymington Street, Tumore.
*D. G. Pfeiffer, 336 Marion Road, Plympton.

Western Australia

*T. H. Talbot, "Wedderburn," Brunswick Junction.
J. Kitchin, 17 Pakenham St., Mount Lawley.
*D. C. Fairs, Collier Road, Bayswater.
*B. W. A. Jacobs, Lawler Street, Subiaco.

Tasmania

W. H. M. Nisbet, "Uneda," Ormond Road, Bellerive.
*J. C. E. D'Alton, M/S1653, Redcliffe.

* Qualified for Limited Certificate.

The above list does not include candidates who although they failed in the examinations for a full certificate, qualified in the subjects for a limited certificate. Such candidates are issued with limited certificates on application.

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FEDERAL QSL BUREAU

RAY JONES, VK3RJ, MANAGER

Frank Anear, ex-VK9WZ, at Momote, has lifted out the call sign VK3AFG, and after a few weeks sojourn in VK6, hopes to air his new call sign from R.A.A.F. Station, Laverton.

Eric Macklin, VK1EM, under date of 13th December, reports safe return from an expedition 200 miles south of Mawson. States he did the last few miles on foot. Apparently he wouldn't listen to reason.

Bob Roberts, G2RO, who last year operated "RO" call signs from numerous British possessions, has got busy and issued QSLs for all contacts. Any station who has missed out may secure the card on application to Bob at 17 Homestead Park, London, N.W.2.

Harry Fox, VU2HF, is seeking contacts with VK7 and VK9 on 14 Mc. c.w. He is on the air regularly at 1000 GMT, and requests all cards direct to Methani Colliery, P.O. Sitarampur, West Bengal, India.

Luis Alegrett, YV5BZ, who has effected a big improvement in the QSL situation with Venezuela since his appointment as QSL Manager twelve months ago, lived in Nicaragua for 18 years. While there he operated YN1ZK. Luis states that currently YN1RA is the only really active station in Nicaragua, and that he is acting as QSL agent for YN1RA. Luis is distantly related to YN1RA. Luis supplies details of two tough certificates offered by the Radio Club Venezuela. One for working nine YV districts either c.w. or phone or both on any band. Currently no station exists in the 9th district, but one will be active shortly. The second certificate is for working 100 YV stations!! A third to be issued shortly will be in multi-colours showing all the shields of the numerous States of Venezuela and the rules for this award are now being drafted. Luis is very pleased with a card from VK1WO and is equally anxious to receive one from Bernie VK1ZM, as soon as Bernie gets settled down again.

Chas Hawker, ex-VK1AC, and active again under his old call sign of VK3JB, advises that he has answered all DX QSLs received, having sent out over 800 cards. Has now only VK and ZL to clear and the job will be finished. Chas is only answering cards received and despatching them via Bureaux unless the necessary coupons are enclosed for direct mailing.

MISSING NOTES

Closing date for copy is the 8th of each month. Any Division or Zone whose notes do not appear in this issue had not forwarded their copy up to the time of going to [illegible].

VICTORIA

One of our recent new members of the Institute, Harry 3XI, is an Amateur who goes in for things in a big way. He is at present in the throws of building a new beam. He has pulled down his old beam which was a mere 3 el. rotary, 60 feet high. The new one when erected will be approximately 110 feet high. It will be a three over three on 20 with a five over five on 2 mx above it. He is erecting it on the ground; he had to buy the block of ground next door to get enough room to do this, and will haul it upright with pulleys and a winch. This will also enable him to make easy adjustments whenever necessary. He has his 20 metre gear operating nicely and is working on some new 2 mx equipment.

Ron 3RN's XYL Helen is convalescing at home after a major operation and Ron, for the present, has become chief cook and bottle washer. By the way, he has discovered a most delightful recipe for pumpkin scones if anyone would like to have it.

Len 3LN has gone "all hi-fi" and Mr. Volts, Mr. Ampere and Mr. Ohms have got their noses out of joint, his new circle of friends include Mr. Bach, Mr. Beethoven and Mr. Brahms.

Alan 3AKZ, now a Doctor of Philosophy, has made a comeback to Amateur Radio after an absence of five years, three years of which were spent in England and the rest of the time just flat out studying. He has built up gear for 15 mx and during the past couple of months has had regular comebacks to his CQs, particularly from the ZLs.

Recently I had the personal pleasure of spending a day with Evelyn Scott, W6NZP, who, with her husband, is touring VK land. In each State she has visited she has made a point of looking up YL operators, also YLs interested in Radio (I came under that category). She and her husband are in a radio parts business for Amateurs in Long Beach, California, and although their interest in Radio is very great, their main interest while here in Australia is to see as many native Australian animals as they can, so we spent the day at the Sir Colin MacKenzie Sanctuary at Healesville.

Their delight in our natural fauna was very gratifying to me, an Australian.

At the next general meeting, to be held on Wednesday, 1st February, at the Radio Theatre, Royal Melbourne Technical College, a lecture will be delivered by a member of the staff of the Radio School, R.M.T.C., on Television, and based on the t.v. commercial operators' license.

The next Hi-Monthly Scramble will be held on Monday, 6th February. Rules can be found on page 12 of "A.R." for September, 1955.

80 METRE TRANSMITTER HUNT

A good crowd turned up for the final 80 mx Tx Hunt for 1955 which was held just before Xmas. Bob 3OJ, who hid the tx, picked out a very picturesque spot on an old disused golf course out towards the Warrandyte area. Bob buried the tx in the ground and covered it over with loose rocks. He used a bow and arrow, the bow of which was very large, to shoot the antenna up into some tall trees. The air line direction of the signal from the starting point drew most of the competitors out along the Old Warrandyte Road and between the tx and this road, although not a very great distance in actual length, there was very dense bushland, quite impassable with a car. This was exactly what Bob had hoped for. 3LN, the winner, took an hour and a half to locate the tx and was followed a quarter of an hour later by 3ADU and 3ALY, who deadheated for second place. With beautiful trees affording shade from a fairly warm sun and delightful views along the undulating fairways of the old golf course, it was a very lovely spot for a picnic. The day concluded with a picnic tea on a very green grassy spot which we felt may have at some time been the seventh green.

The first transmitter hunt for 1956 will be held on Sunday, 5th February, when 3LN will hide the tx. These tx hunts are held approximately once a month, the dates being advertised over the Sunday morning broadcast from 3WI. They are held on a Sunday afternoon commencing at 2.30 p.m. from the plantation in College Crescent at the rear of the University. The frequency of the hidden tx is 3618 Kc.

Build up some gear and come along to the next one, bring the family and friends and a picnic tea and we can assure you of an enjoyable afternoon out with a friendly crowd whose interests are similar to your own. Even if you are not equipped with 80 mx gear it is still an enjoyable outing for you and the family and the antics of the competitors looking for the tx usually prove most amusing. During the summer months pop the swim suit in just in case, as these hunts finish up at a variety of places.

NORTH EASTERN ZONE

George 3GD and Vern 3AXW have been heard on 40 mx. Tom 3TS has not been heard using his beam. Associate Jim Harrington now operates on a VL3 net to Euroa. Les 3ALE has been slowed down with 'flu in the family. Earle Scoones is hard at study. Johnny 3ACK is concentrating on his photography business. Peter 3APF is on 5 mx skeds. No details of the 2 mx operations of Syd 3CI and Alan 3UI. Keith 3JC is still on his house-building. Ray 3FI is settling in Shepparton, with ambitions re Amateur Radio. Murray 3HZ and Alex 3AT do not get a mention this time, but Bruce 3AGG, now minus his b.c.i. problem, is on 20 mx along with Brian 3ASF. Howard 3YV, with an article in last month's "A.R.," is still on the colour photography. Henry 3HP is well occupied with his VL3 skeds and Ron 3AQG has his rig on 80 mx now.

Des 3BP is in strife again with the wind and his antenna system. Jim 3JK is doing well on 21 Mc. Bruce 3QC is working on essential modifications to his caravan, and Jack 3AKC is now in business in Wangaratta. Bill 3AWQ is collecting some gear together. Frank 3ZU is after a parasitic in his tx p.a. Kevin 3IR is still inactive and Ken Mercer is keeping quiet. Ken 3KR is understood to be the first zone member to work Doug. VK1IJ (on Macquarie Island), who is in turn growing a beard. Jack 3FF is doing routine work on VL3QB. Bill 3JP holidaying with the XYL and family in Brisbane. We all hope Keith Cakebread was successful at the last A.O.C.P. morse exam. Vic 3ABX has not been seen lately, but Hugh 3AHF is believed to be still about, and lastly, Des 3CO expects to have to re-organise the Lazy-H after the recent wind.

At the moment, the zone hook-up will continue on 7050 Kc. each Sunday at 1330 hours. 3WI will advertise any changes.

CENTRAL WESTERN ZONE

3IB activity! Lots of DX on 14 Mc. c.w. to the tune of seven new ones for the past month, making total of 77 countries chalked up now. Occasionally hear Allan 3HL on 14 Mc. making a noise. Some sporadic listening on 7 Mc. has revealed good conditions for local working. 3.5 Mc. has been so noisy, have given it away. Communication round Central Western Zone is defunct, therefore nobody knows much about what anyone else is doing. 3IB in middle of big re-building spree—new grid dip meter and a preselector utilising 6AG5, which gives better than 30 db lift on 21, 27 and 28 Mc. A brand new tx under construction, set up Geloso-807-813. Only waiting for panels and chassis to come back from sprayers to get on with the job. 3IB still gloating over 100 Kc. xtal won from Loran C.R.O. in Disposals handout. Went to Melbourne recently to farewell 1GA before he departed for Mawson.

3AX made New Year's resolution and contemplating making comeback with new tx in '56. Alan 3AJX was in throes of a complete re-build, but since XYL and brand new harmonic have arrived home; probably full-time nursemaid, now. Congrats to Alan and Audry on arrival of a daughter. 3AKW has been busy making hay on the farm recently.

EASTERN ZONE

Due to pressure of work Keith 3SS, who usually writes the zone notes, has detailed me to do them this month, so here we go. There is great activity on 2 mx in the zone. Each Sunday night the 144 Mc. gang hold a hook-up, the stations operating are: Bill 3TY in Sale, whose sigs have been heard by 3RK in Melbourne although no two-way contact as yet. Graham 3QZ has a rig on 144 Mc. and works the local boys. Stan 3ZAB active on 144 Mc. Gordon 3TH popping up occasionally on 80 mx and working on 2 mx also. Joe 3TO has not been on 144 Mc. for a while as his rig is (or was) still in Melbourne, having been down there for the Exhibition. Rex 3VL and Gwen 3UB have a new beam on 144 Mc. and are getting ready for 50 Mc. Jim 3DI is active on 2 mx and getting ready for 5 mx. Ron 3ZD working 144 Mc. every night with good results. A new call to the v.h.f. group is that of George Francis, 3ZCG. George was married on 28th January and the zone wish him and his XYL all the best for their future happiness. George is motoring to Adelaide on his honeymoon and working 144 and 288 Mc. mobile and is looking for contacts.

Regular ones on the 80 mx hook-up are Ron 3PR, who is trying his hand at bowls; Martin 3AMV had the misfortune to burn up a transmitter and has not been heard for a while; Keith 3SS pops up fairly regularly although pressure of work, plus holidays (on doctor's orders, he says), keeps him busy; David 3DY has his mind on everything bar radio at the moment, but hope he will soon join us in the hook-up again. George 3AOD is trying his hand at a little farming with dire results, due to rain, bad luck. George is awaiting the opening of the 10 mx band to work back to G land. Ian 3AAV went portable/mobile to VK5 during his holidays with good results from his much converted 101. Jack 3AJK still battling along with his 5 watts with good results and maintains a constant appearance on 80 and 40 mx. Graham 3QZ has his activities restricted due to illness of his XYL. Hope she is getting better now Graham. Ben 3ADE is working DX on 20 mx; would like to see you on 3630 Kc. sometime Ben. Stations not heard on the hook-up for many moons are Ossie 3AHK, Leo 3SG, Lindsay 3IO, Bill 3WE, Jack 3FK, Cliff 3AJA, Kel 3AEP and Allan 3AFA. Would like to appeal to you chaps to please come on the hook-ups and make them something worthwhile.

Something of importance that is coming off this month is a v.h.f. field day to be held at Warragul. The V.h.f. Group, 3LN and boys are coming up to give us a demonstration of their gear. The proposed date is 26th February.

New associates are Alf Mc., Terry P., and Ray D.

GEELONG AMATEUR RADIO CLUB

Members have returned from their vacation to find a new Geloso v.f.o. for the Club's tx. The general discussion at the moment is centreing round what form the new rig for 3ATL will take. The tx hunt held recently was won by Ted 3AEH, closely followed by Kevin Mills and Vic Clarke. The location was at Mt. Duneed, about 5 miles from Geelong and the tx was taken out by Bill 3AWZ and Jim 3ABR.

The old bug bear, b.c.i., has reared its head again and some members are winding wave traps and orienting antennaes to reduce same. Any advice will be very welcome. Glen 3ZBJ with Bill 3AWZ have worked several stations in Melbourne on 2 mx. Peter 3ZAV has also had some success on 2 mx. At the moment Bill 3WT and William 3BU are deeply absorbed in the construction of the T2FD antenna. Maybe we will hear them on 20 mx soon.

We wish all friends a happy year's activity, free of b.c.i. and QRM.

QUEENSLAND

BRISBANE DISTRICT

With Frank 4ZM enjoying his annual three weeks' carousel at Tewantin, the notes this month are the sole effort of your Secretary, 4PR. On Thursday, 15th Dec., your Secretary had the great honour of being a guest at the Founders' Night Dinner, of the Institute of Radio Engineers. It was really a superb affair and the evening reached a climax with a speech by Mr. Brittain, who is the engineering brains behind one of the commercial t.v. channels to open in Sydney this year. He had just returned from one of his many trips to the U.S.A. and Europe in connection with his job and gave a fairly complete picture of t.v. in those regions. A film on t.v., made for the U.S. public, was shown and though it mainly covered the sales potential of advertising by t.v., it set the lecture off properly. Mr. Brittain then gave an hour or so to answering questions. One particular question by your Secretary on t.v.i. was answered fully and you can be assured that when t.v. comes to VK4 the brunt of interference suppression will not rest entirely on the shoulders of the Amateur as it did in the U.S.

Fortunately, t.v. interests here in VK have had the sorry state of affairs the Ws had early in the piece regarding interference as an example and are not going to be "caught" the same way. The bulk of U.S. rxs manufactured prior to the 21 Mc. band being opened to Amateurs had an i.f. of between 21 and 27 Mc., which really was disastrous. There was t.v.i. which the Amateur could suppress only by staying off the band and nothing but a new rx with a higher i.f. could fix the trouble. The Australian manufacturers have chosen an i.f. of well over 30 Mc., thus making this fault impossible here. Possibly in respect to t.v.i., the Federal Parliament's slow introduction of t.v. in Australia was a blessing to Amateurs because we have the experience of our brother experimenters, especially in the U.S., to fall back on.

It may be wise for Federal Executive to get in touch with the A.R.R.L. and that mighty guy, Phillip Rand, who has done so much in the field of t.v.i., and become acquainted with the troubles we can expect and how to educate the people so that interference caused by ignition and sundry unsuppressed electrical appliances will not be the signal for hot heads in the t.v. audience to lynch the local Amateur population. One thing is certain, with television we shall have a new era in which we will have to use a lot more care with construction of our gear and take a post graduate course in diplomacy to deal with people who would not get violent with a little b.c.i., but who will, possibly, be savage beasts with t.v.i.

While the I.R.E. Dinner was a tremendous success, the Christmas "Get-Together" of the W.I.A. in Brisbane was a dismal flop. Only 14 members and guests attended, to the disappointment of all, especially 4ZM who worked hard to make it a success. He had arranged to have catering for 25 and the small attendance put the Division a couple of pounds out of pocket.

To get on to a more pleasant subject, we are very pleased to report that one of our members, 4EB, came into quite a spot of good fortune. Peter won first prize in a recent Golden Casket and is better off by £6,000. Congrats., Peter! While congratulations are flying around, a hearty pat on the back to 7AI for his excellent article on pi networks. To have the first steps towards victory over t.v.i. when it comes, as it certainly will, we can't be more emphatic in our recommendation of the pi network in the final amplifier and the dope in 7AI's article. Personal pars, this month, have been sparse with 4ZM on leave, but let us hope the notes have been of some interest in their presentation. If any of our members have anything of interest that could be included in our notes, shoot them into us. 73 from 4PR.

MARYBOROUGH

4AI built a new grid dipper. Rumours that he is foresaking xtal control have been proven by the construction of a v.f.o. Alan claims that it only moves ten cycles when given a smart nudge with a sledge hammer. After a day's work and the help of some cobbers, 4BG's rotary 14 Mc. bird-perch was raised and after a few adjustments, is working according to Hoyle. Ron is now putting his 50 Mc. converter onto 21 Mc. Hands up all those who have done the same.

4CB plans an early come-back on 21 or 28 Mc. Has half completed his new t.v.i.-proof, tropic-proof, moth-proof tx. Still looking for someone to weld his 50 ft. tower together. 4AI and 4BG recently went to Gympie and inspected shacks at 4XR (found in the act of duplicating a Viking tx) and 4HZ, who has been playing with indoor 80 mx antennae.—4BG.

TOWNSVILLE

The last meeting of T.A.R.C. did not have much of a roll up due to inclement weather and it spoilt the trip to the T.R.E.B. power station under guidance of 4RU, so Wally promised to do the escorting at a later date. Quite a lot of discussion took place re 144 Mc. hook-ups and it seems that finance is the bug bear with most of the chaps and then again some wanted it to be 50 Mc., so it looks like only four will be on 144 Mc. at the most. Good luck to the chaps who are interested as the others may follow if you keep plugging.

4BW has had almost 800 QSOs at 7 a.m. on 7 Mc. during the last three years with Harry 4ZP. 4EJ holidaying at Magnetic Island and day dreaming of new antennae to be built in New Year. 4BE only active on 21 and 28 Mc. and has ZL Special for both bands. 4LK still hoping that 50 Mc. will open up and give him a few contacts for contest.

4DK looking further afield as is now on 14 Mc. chasing DX. 4RW hoping four new countries worked during the month will QSL; has now 160 confirmed out of 175. 4PS heard at 4LR's shack working 4JH on 50 Mc., but they cannot break the sound barrier to 4LK, who keeps a close watch for them. 4WH wondering how the floods will treat him in coming wet season and still trying to get the old bus running. Buy a new one Ed and give the boys a shock. 4ZO in Collinsville hoping to get on 7 Mc. to work Townsville gang. 4NT, our boy from the bush, cutting his teeth with new call sign and working all and sundry; asking for ideas on best antenna to use. Well boys, here is hoping 1956 gives you plenty of DX.—4RW.

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SOUTH AUSTRALIA

The Xmas meeting was very informal due to the foresight of Dougal 5BY, who moved that normal business be suspended after new members had been passed and the cards distributed. Entertainment with a selection of films was the order of the evening and Lloyd 5OK had procured a very fine colour film on the subject of cheese. Those who were not there might wonder how we found such a "documentary." Well, it depicted the old world scenes and places where these differently named kinds originated, and as the film was made in Hollywood, need I add more?

Our official guest for the evening was one of the Institute's original members, Mr. Geoff Clarke, who thoroughly enjoyed his return into the ranks. In his official capacity as a Member of Parliament, Mr. Clarke thanked the members of the Institute for their generous offer to assist in the Emergency Fire Services, and mentioned particularly the valuable ground work that Jim Sullivan, 5JK, had done. We had also with us our friend, 5RC, R. Bennett, Esq., whom we invited so that he could let all his friends see that he was well alive and full of his ready-wit still—in spite of the President and his Past President!!

John 5HI was thoroughly enjoying himself renewing many contacts, and it must be ample reward for those who make it possible for John to be present when they look upon John's happy face. It was good to see Alan Heath and Bob Scott batting along with the regulars. Don't make it too long before you appear again chaps. Tom 5TL sent along his greetings to the members via Howard 5XA, who runs a regular sked with Tom on Sunday mornings on 20 mx.

The Short Wave Listeners' Group held their December meeting on the 19th in the Central Mission rooms. It was a social gathering to which I was invited, but unfortunately I could not make it. For 1956, the meeting night has been changed to the third Monday in the month, 20th February being the first night.

Around the town, activity on the h.f. bands is improving. A call has burst on to the air after a long absence, namely 5KH, Keith. Glad you have made the air again and also the Xmas evening. Joe 5JO busy building a shack to out-do all shacks—looking for future contracts Joe? Carl 5SS, with his new call, passing his enforced rest using the Institute's Type 3 to good effect; the first call is always the worst Carl; the agony of indecision changes to that never forgotten thrill when back comes that call we've worked so hard to own. Whilst I am on new call signs, remember chaps that elevation to full membership is NOT automatic. Application to Council is necessary; some members have not yet applied!

Council at its January meeting discussed the advisability of having a T.V.I. Executive Committee and although as of writing no members have been appointed, Councillors have been detailed to approach those technically equipped to deal with t.v. with the object of getting them together to form the Committee. We must not leave our attack until the harmonics have escaped! Jack 5JD, who has been an able Federal Councillor for quite a few years now, was reappointed for another term of office (in his absence of course). Thanks Jack, you might be the passenger on the F.C.C. wagon, but you'll have plenty on your back at the Federal Convention. I hope to be the "fly on the wall."

SOUTH EAST AREA

At the Mount, the monthly meeting was held a week earlier because of the holidays. There was a good roll up with Vic 5JH visiting to partake of the bottles of Xmas cheer. No lecture for the evening, but by the time the last echo had died all had W.A.C. and D.X.C.C.—counting those that got away of course! Those visiting the fair city over the holiday period that made themselves known were 3ATN, from Birchip and our worthy Treasurer, Jim 5FO. Stuart 5MS, 3ATN and 5JH spent a very pleasant afternoon with Bram 5AB, at Hynam, arriving just in time to hear Bram having his first QSO on 40 mx (which parasitic was that Bram?—Sub Ed.). Good 40 mx signals reaching Adelaide, too, from Claude 5CH with Tom 5TW assisting. Hadn't worked Claude before, so do not let's stop there for 1956; glad to know that a good recovery has been made.

Col 5CJ has been active on 40 mx, but nothing heard of the others—understand Erg 5KU spends lots of time "fishing." Stuart 5MS still getting a bit of DX on both 15 and 20 mx; reports coming in seem to compliment the 15 mx band (check on the B.B.C. on 21.710 Mc. at 0600-0845 GMT chaps for European contacts). The boys from the S.E. pass their 73 for 1956 to you all.

EYRE'S PENINSULAR

Have been working Wally 5DF pretty consistently each Sunday. Wally hopes to make Adelaide by the time you read this. Jack 5VJ heard at good strength over the holidays. Norm 5YM active according to reports, but haven't worked him yet. Bert 5OR worked with good strength until QSB took us both out; hopes also to make Adelaide for February. With the extra power Bert you should have some good DXing. Bert also very interested in 144 and 288 Mc. and hopes to get the "gen" when on the main land. George 5EC taking a holiday from his duties at Ceduna, should make the meeting. Am very glad that you have been able to make it after so long. George reports that Clarrie 5KL, of 6 mx fame, is now at Air Radio in Ceduna. When will we hear that call again Clarrie? Not too far distant, I hope.

NORTHERN DISTRICTS

Compson 5EF has forwarded his manuscript. Very good; that makes two from the country, and two from the city. Who is going to win? Our record is close in sight so keep it up chaps (Wally 5DF also sent one in). Bob 5RI usually puts a good signal in from Mt. Bryan and is looking for 144 Mc. signals too.

2AGZ, in Broken Hill, increasing power and improving beams, but don't look for 99 phone signals; c.w. contacts will be the initial break to start with; usually late summer or early autumn. Don 2AMN (ex-5TM) heard for the first time contacting Dave 5BF. Would have liked to have had a yarn myself, Don, but time was against me.

And now I bid you adieu and maybe Jack will be over his shipping troubles by the 8th of February and he'll be looking for the news from you all.—6XU.

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WESTERN AUSTRALIA

In the near future it is expected that a visit to the Kurinana Oil Refinery will be arranged. Few details are to hand at present, but dates have been tentatively fixed at either the 17th or 24th March. It will be noticed that these dates are Saturdays. Full details will be given over 6WI when available. Numbers will be strictly limited. Any country members who will be in town at the time will be welcomed. Watch for further details.

Don 6HK and Wally 6ZAA recently left for a three weeks' tour of the Eastern States. They took portable gear for 7 and 144 Mc. 144 Mc.! There wouldn't be a v.h.f. contest on would there Wally?

Your scribe, along with 20 to 30 others, complete with cars and portable gear, recently participated in the V.h.f. Group's first fox hunt (2 mx). The fox proved to be very elusive, but was finally run to earth by 6ZAD. Many hunters arrived complete with maps, compasses, protractors, etc. Ralph, however, just followed his nose. Wally 6ZAA made an important discovery—12 (volts) into 6 (volt filaments) won't go! One lady was heard to observe that it should be called a pig hunt, seeing that we are all "Hams"!

The question of the election of Federal Councillor is before us, and must be finalised by 17th January. The question is rather a sticky one as George 6GM has declined to nominate again, after filling the post for 20 years. Our thanks are due to George for his sterling service.

Tom 6MK recently returned from a tour of England and the continent. He may be heard nightly, warming up his new beam, working America and Europe. Len 6LG has been doing some re-organising in his shack. Haven't heard him for some time since he finished that job so I guess he must be doing something with some 35Ts. Heard the "Voice of Norseman"—Terry 6TK—for the first time for some weeks recently. How's the caravan progressing Terry? Believe Kevin 6KO has little time for Amateur Radio since they opened that Olympic Pool in Merredin. All the best for 1956—a trifle late perhaps, but this writing a month ahead!—6BE.

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TASMANIA

News this month seems to be as scarce as DX on 2 mx. I am not quite sure which is responsible—the holidays or the weather, but whatever it is, I am agin it. Somehow or other, I have beaten the gun again, and this time I moved Len 7LS before he was ready. However, I feel confident that 'ere this hits print, he will be in his new QTH. Queenstown seems to be suffering from an exodus of Amateurs, and Harry 7BR will be leaving shortly for Bronte. Harry has recently acquired an AMR 300, so you will have to watch him Reg, or he will take all the DX away from you.

Leon, it looks very much as though Queenstown is in your hands, so you had better order another half dozen 807s. Ah now, here is one I can move with a reasonable degree of accuracy. Ted 7FJ has moved to Springfield and is now only a very short distance from my QTH. Methinks I shall have to apply for a high power permit, and then, even if I can't drown him out, I might manage to induce a few eddy currents in that trophy.

Tom 7AL is playing around with a new converter which shows promise of being really hot. With bandswitching from 80 to 10, and a T2FD waiting to be hooked up to it, there is no telling what will happen. Hope you have a good stock of QSL cards on hand Tom.

Joe 7BJ heard on 40 mx, working the Federal station 3WIA. By the way, Joe, what really did happen to that 2 mx converter? Rumour has it that you gave it to 7AL in exchange for his plans of an improved, unterminated T2FD.

In Launceston recently, the lights dipped in brief salute as Max 7CA found himself across the main h.t. Really cute the way these young harmonics catch on Max. Would you care to say a few words on behalf of all bleed resistors? Sorry Pal, we can't let you broadcast that. Len 7LE and Bill 7WG are enjoying recreation leave at the time of writing. Every now and then I give Bill a gentle nudge, but as yet it is of no avail. However, I shall press on, undaunted. I will get him back on the air yet.

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1½ inch diameter .... 3/7½ Plus Tax

Q Plus 5/16 inch diameter, complete with screwed Iron Core .... 3/4 Plus Tax

Q Plus Coil Dope .... 2/4 Plus Tax

SET BUILDING SIMPLIFIED

Q PLUS PRE-FAB. TUNING UNITS

Only require connection to power supply and I.F. channel. No alignment necessary.

TYPE QW5

features Band Spread

on the 31 Metre, 25 Metre, and 19 Metre Bands in addition to Broadcast coverage.

PRICE £8/2/9 Plus Tax

TYPE QWR5

as above, but with R.F. Stage

PRICE £14/14/0 Plus Tax

DIAL GLASS to suit, **7/10** Plus Tax

Q PLUS SHORT WAVE COILS

13 to 42 Metres, or 16 to 50 Metres .... 5/- Plus Tax

50 to 150 Metres .... 6/8 Plus Tax

BARGAINS

Marquis Rib Type Coil Formers .... 1/11 each

1H6G Valves .... 2/- each

30K, 47K, 100K 2 Watt Resistors .... 5/- dozen

Phone Jacks .... 2/6 each

Carbon Microphone Inserts .... 5/- each

0-20 Volt Meters, 5 Ma. movement .... 11/9 each

200 Ohm Heavy Duty Rheostats .... 9/11 each

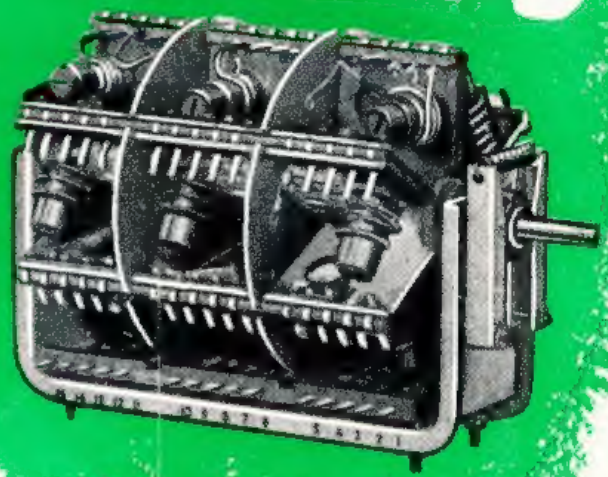
8" Ext. Speaker Boxes (walnut or white) 19/11 ea.

290 LONSDALE STREET, MELBOURNE **FB 3711**

RECEIVER COIL TURRETS FOR HAMS

Gorler Model F320

NEW RELEASE



We announce a new release of specialised communications components for Amateur Receivers or Low Powered Transmitters. These Turrets are expected to arrive in Australia from Germany about March-April and will be released through our usual distributing Houses..

• SPECIFICATIONS

1. Dimensions: Length 6½ in., width 4 in., height 3½ in.
2. Frequency range: 500 Kc. to 30 Mc. (six bands).
3. All coils complete with trimmers and slugs.
4. Stages available: R.F., Mixer, and Oscillator.
5. Turret contacts—five per coil—Rhodium plated.
6. Tuning condenser required—3 gang 200 pF. maximum per section.
7. All circuits are Hi-Q with only best quality ceramic trimmer condensers and polystyrene coil formers.
8. Turrets will also be available less coils and trimmers for low powered transmitters or v.h.f. converters.
9. Any coil bank may be extracted for modification without interruption to operation of other banks.

• PRICES

Model F320 Coil Turret, complete with wound coils, slugs and trimmers, 500 Kc. to 30 Mc.—

£20/0/0 (list)

Model F320 Coil Turret as above but less coils and trimmers—

£10/0/0 (list)

Australian Factory Representatives:

R. H. CUNNINGHAM PTY. LTD.
118 WATTLETREE ROAD, ARMADALE, S.E.3, VIC.
and 184 VICTORIA ROAD, DRUMMOYNE, N.S.W.